

EMISSIONS TEST REPORT

Report Number: 102014290BOX-001ee

Project Number: G102014290

Report Issue Date: 08/10/2015

Product Designation: Modular Device (RF Card)

Standards: FCC 47CFR Part 15 Subpart C Section 15.231 (2015)
RSS-210 Issue 8 December 2010
RSS-Gen Issue 4 November 2014
ICES-003 Issue 5 August 2012

Tested by:
Intertek Testing Services NA, Inc.
70 Codman Hill Road
Boxborough, MA 01719
USA

Client:
IntelliSAW
100 Burt Road
Andover, MA 01810
USA

Report prepared by



Vathana F. Ven / Staff Engineer, EMC

Report reviewed by



Kouma Sinn / Staff Engineer, EMC

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1 Introduction and Conclusion

The tests indicated in section 2.0 were performed on the product constructed as described in section 4.0. The remaining test sections are the verbatim text from the actual data sheets used during the investigation. These test sections include the test name, the specified test Method, a list of the actual Test Equipment Used, documentation Photos, Results and raw Data. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product tested **complies** with the requirements of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) tested.

2 Test Summary

| Section | Test full name | Result |
|---------|--|--------|
| 3 | Client Information | -- |
| 4 | Description of Equipment Under Test | -- |
| 5 | System Setup and Method | -- |
| 6 | Fundamental Field Strength and Conducted Output Power (CFR47 Part 15 Subpart C Section 15.231(e), RSS-210 Annex I) | Pass |
| 7 | Occupied Bandwidth (CFR47 Part 15 Subpart C Sections 15.215, 15.231(c), RSS-Gen Section 6.6) | Pass |
| 8 | Radiated Spurious Emissions (CFR47 Part 15 Subpart C Sections 15.205, 15.209, and 15.231(e), RSS-210 Annex I, RSS-Gen) | Pass |
| 9 | Duty Cycle (CFR47 Part 15 Section 15.35 and Subpart C Section 15.231(b)(2), RSS-Gen Section 6.10) | Pass |
| 10 | Automatically Limiting Operation (CFR47 Part 15 Subpart C Section 15.231(e), RSS-210 A1.1.5) | Pass |
| 11 | AC Line-Conducted Emissions (CFR47 FCC Part 15 Subpart C 15.207, ICES-003) | Pass |
| 12 | Receiver Radiated Spurious Emissions (CFR47 Part 15 Subpart B Sections 15.205, 5.209, ICES-003) | Pass |
| 13 | Revision History | - |

3 Client Information

This EUT was tested at the request of:

Client: IntelliSAW
 100 Burt Road
 Andover, MA 01810
 USA
Contact: Jonathan P. Murray
Telephone: +1.978.409.1534 x204
Fax: None
Email: jmurray@intellisaw.com

4 Description of Equipment Under Test

Manufacturer: IntelliSAW
 100 Burt Road
 Andover, MA 01810
 USA

| Equipment Under Test | | | |
|--------------------------|--------------|--------------|---------------|
| Description | Manufacturer | Model Number | Serial Number |
| Modular Device (RF Card) | IntelliSAW | 400.00152 | 08150695 |

| | |
|---------------------|--------------------------------------|
| Receive Date: | 02/26/2015, 03/05/2015, & 06/01/2015 |
| Received Condition: | Good |
| Type: | Production |

| Description of Equipment Under Test (provided by client) |
|--|
| The IntelliSAW RF card is a circuit board assembly integral to multiple current and future products. It is not sold to third parties and is therefore eligible for certain exceptions as a Limited Modular Approval. The module was tested with a PIFA patched and 17 cm monopole antennas. 400.00152 (ASSEMBLY, INTERROGATOR RF BOARD, PARTIAL DISCHARGE, SMA) |

| Equipment Under Test Power Configuration | | | |
|---|---------------|-----------------|------------------|
| Rated Voltage | Rated Current | Rated Frequency | Number of Phases |
| Powered from 24VDC Class II power supply | Not provided | N/A | N/A |

Operating modes of the EUT:

| No. | Descriptions of EUT Exercising |
|-----|---|
| 1 | The EUT was programmed to transmit between 425-442 MHz with a 100% duty cycle |
| 2 | Device was in Rx/idle mode |

Software used by the EUT:

| No. | Descriptions of EUT Exercising |
|-----|--------------------------------|
| 1 | None |

5 System Setup and Method

Description of Equipment Under Test (provided by client)

The IntelliSAW RF card is a circuit board assembly integral to multiple current and future products. It is not sold to third parties and is therefore eligible for certain exceptions as a Limited Modular Approval. The module was tested with a PIFA patch antenna and a 17 cm monopole antenna.

400.00152 (ASSEMBLY, INTERROGATOR RF BOARD, PARTIAL DISCHARGE, SMA)

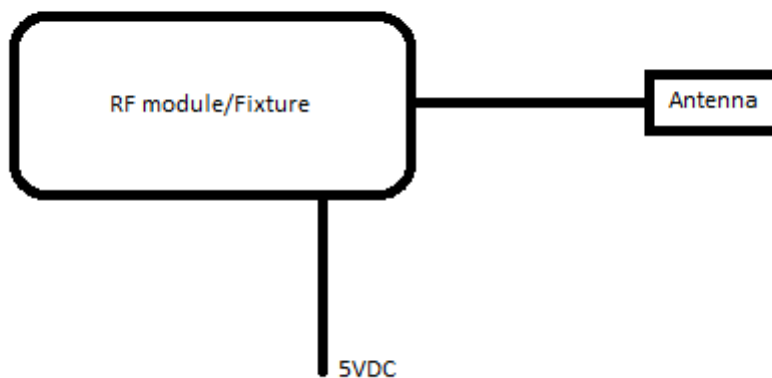
| Equipment Under Test Power Configuration | | | |
|--|---------------|-----------------|------------------|
| Rated Voltage | Rated Current | Rated Frequency | Number of Phases |
| IntelliSAW RF Module | | | |
| 4.3 to 5.5 Vdc | 500 mA | N/A | N/A |
| IS485 host equipment | | | |
| 24 Vdc | 125 mA | N/A | N/A |

Notes: All tests except CEMI – Cotek 80 ~ 265 Vac/dc class II power supply (meets class A CEMI)
CEMI test of module: Agilent E3620 120Vac variable DC supply. Module-only, 5 Vdc; IS485 host unit 24 Vdc.

5.1 Method:

Configuration as required by FCC 47 CFR PT 15.231(e), ANSI C63.10:2013, ANSI C63.4-2014, ICES-003, RSS-Gen, RSS-210.

5.2 EUT Block Diagram:



6 Fundamental Field Strength and Output power

6.1 Method

Tests are performed in accordance with FCC 47 CFR PT 15.231(e), RSS-210, and ANSI C63.10.

TEST SITE: 10m ALSE

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A wooden table 80 cm high is used for table-top equipment.

Measurement Uncertainty

For radiated emissions, U_{lab} (3.5 dB at 3m and 3.5 dB at 10m below 1 GHz, and 4.2 dB at 3m above 1 GHz) < U_{CISPR} (5.2 dB), which is the reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where

- FS = Field Strength in dB μ V/m
- RA = Receiver Amplitude (including preamplifier) in dB μ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

RA = 52.0 dB μ V
 AF = 7.4 dB/m
 CF = 1.6 dB
 AG = 29.0 dB
 FS = 32 dB μ V/m

To convert from dB μ V to μ V or mV the following was used:

$$UF = 10^{(NF / 20)} \text{ where } UF = \text{Net Reading in } \mu\text{V}$$

$$NF = \text{Net Reading in dB}\mu\text{V}$$

Example:

$$FS = RA + AF + CF - AG = 52.0 + 7.4 + 1.6 - 29.0 = 32.0$$

$$UF = 10^{(32 \text{ dB}\mu\text{V} / 20)} = 39.8 \mu\text{V/m}$$

6.2 Test Equipment Used:

| Asset | Description | Manufacturer | Model | Serial | Cal Date | Cal Due |
|----------|--|-------------------|--------------------|-------------|------------|------------|
| 145128' | EMI Receiver (20 Hz - 40 Ghz) | Rohde & Schwarz | ESIB 40 | 839283/001 | 03/17/2014 | 03/17/2015 |
| 145-410' | Cables 145-400 145-403 145-405 145-406 145-407 | Huber + Suhner | 10m Track A Cables | multiple | 10/04/2014 | 10/04/2015 |
| 145106' | Bilog Antenna (30MHz - 5GHz) | Sunol Sciences | JB5 | A111003 | 10/24/2014 | 10/24/2015 |
| Dav004' | Weather Station | Davis Instruments | 7400 | PE80529A61A | 10/06/2014 | 10/06/2015 |

Software Utilized:

| Name | Manufacturer | Version |
|--------------------|--------------|------------|
| EMI Boxborough.xls | Intertek | 08/27/2010 |

6.3 Results:

The sample tested was found to Comply.

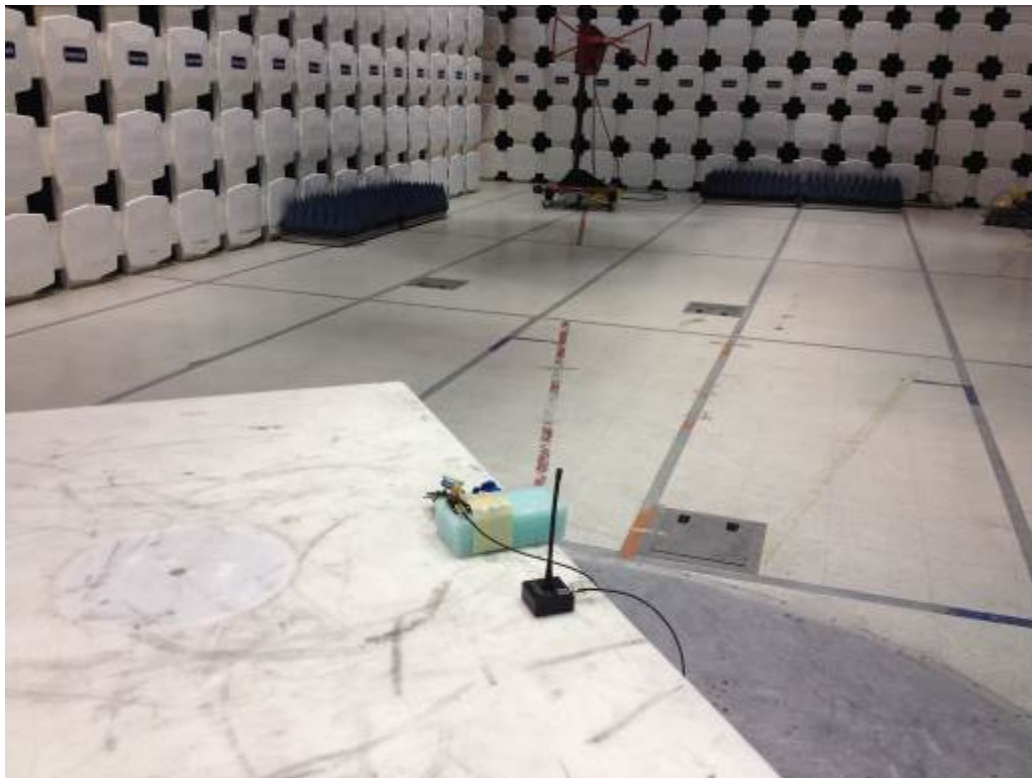
(e) Intentional radiators may operate at a periodic rate exceeding that specified in paragraph (a) of this section and may be employed for any type of operation, including operation prohibited in paragraph (a) of this section, provided the intentional radiator complies with the provisions of paragraphs (b) through (d) of this section, except the field strength table in paragraph (b) of this section is replaced by the following:

| Fundamental frequency (MHz) | Field strength of fundamental (microvolts/meter) | Field strength of spurious emission (microvolts/meter) |
|-----------------------------|--|--|
| 40.66-40.70 | 1,000 | 100 |
| 70-130 | 500 | 50 |
| 130-174 | 500 to 1,500 ¹ | 50 to 150 ¹ |
| 174-260 | 1,500 | 150 |
| 260-470 | 1,500 to 5,000 ¹ | 150 to 500 ¹ |
| Above 470 | 5,000 | 500 |

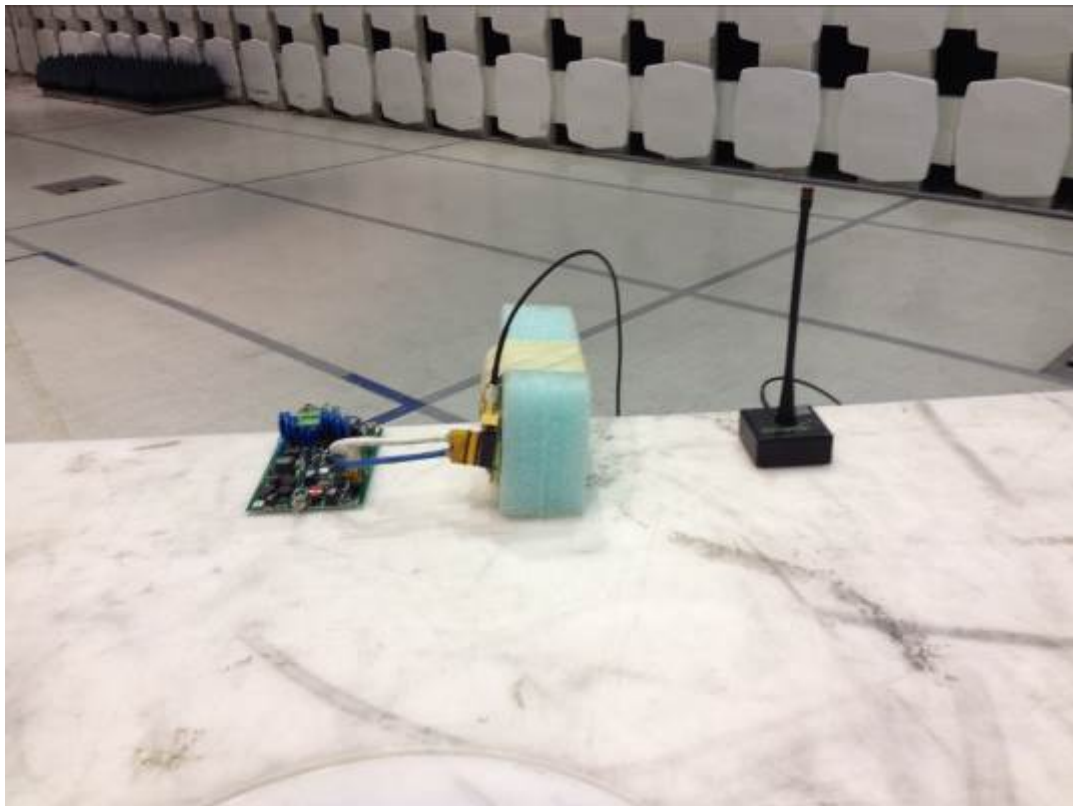
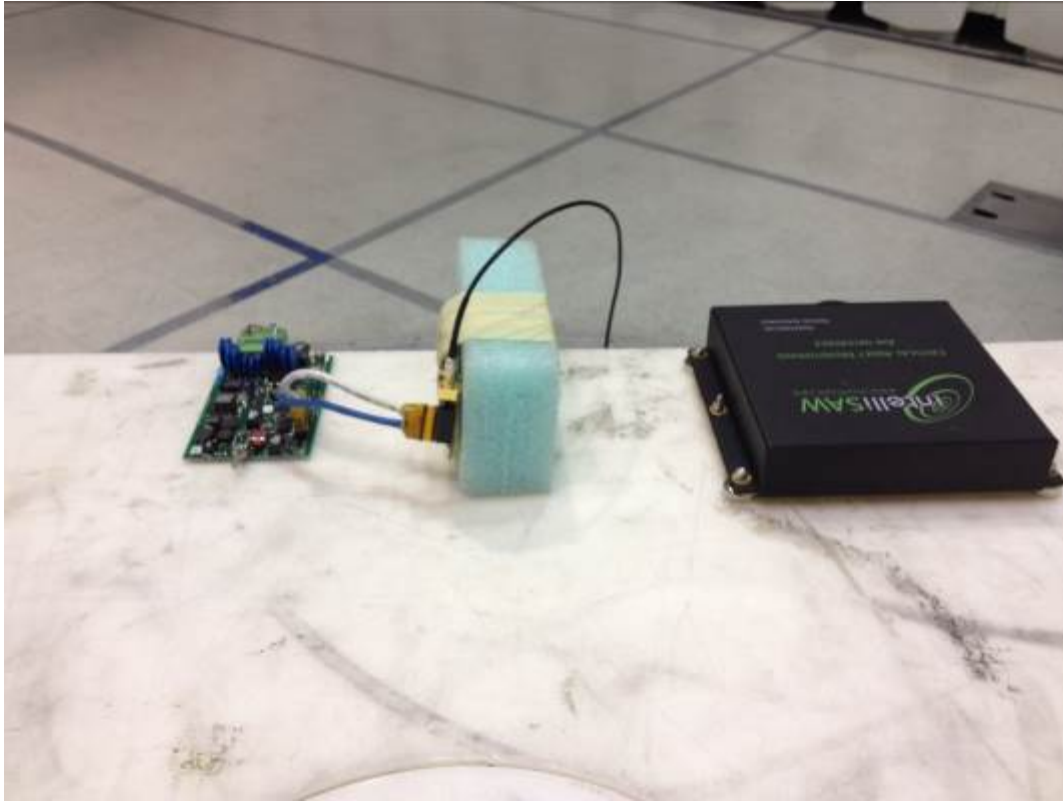
¹Linear interpolations.

6.4 Setup Photographs:

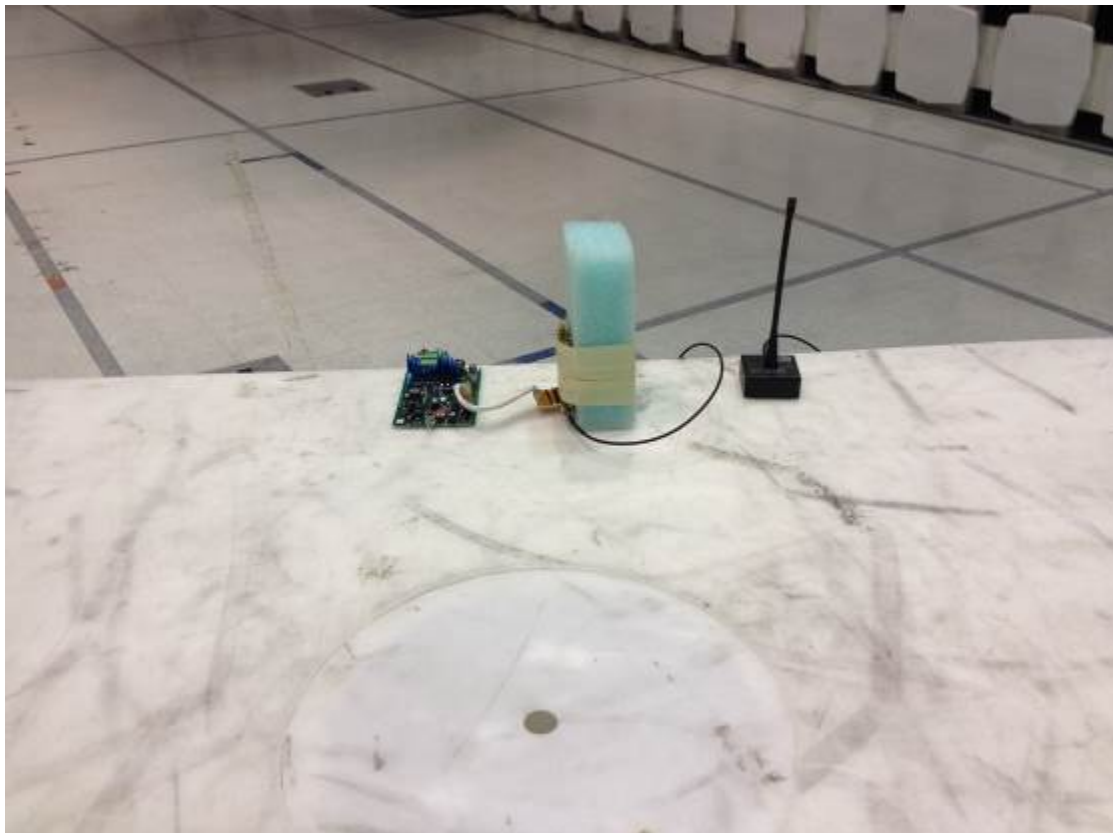
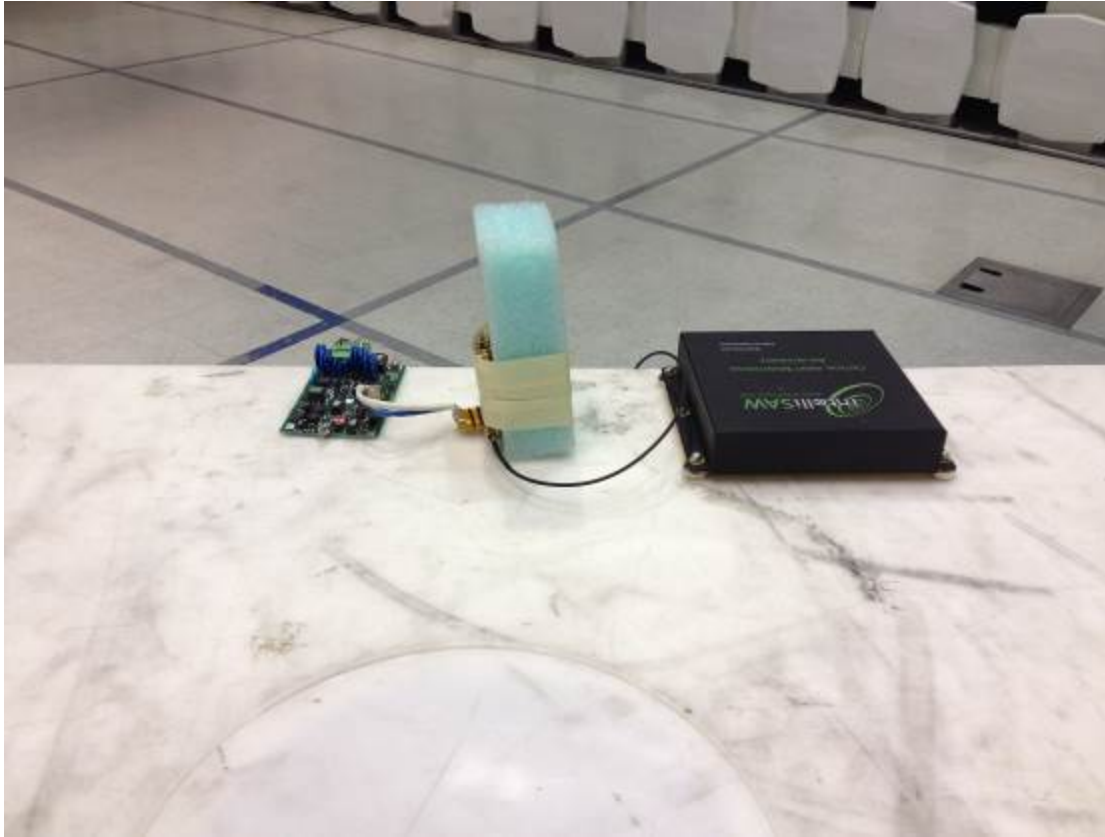
X-Axis



Y-Axis

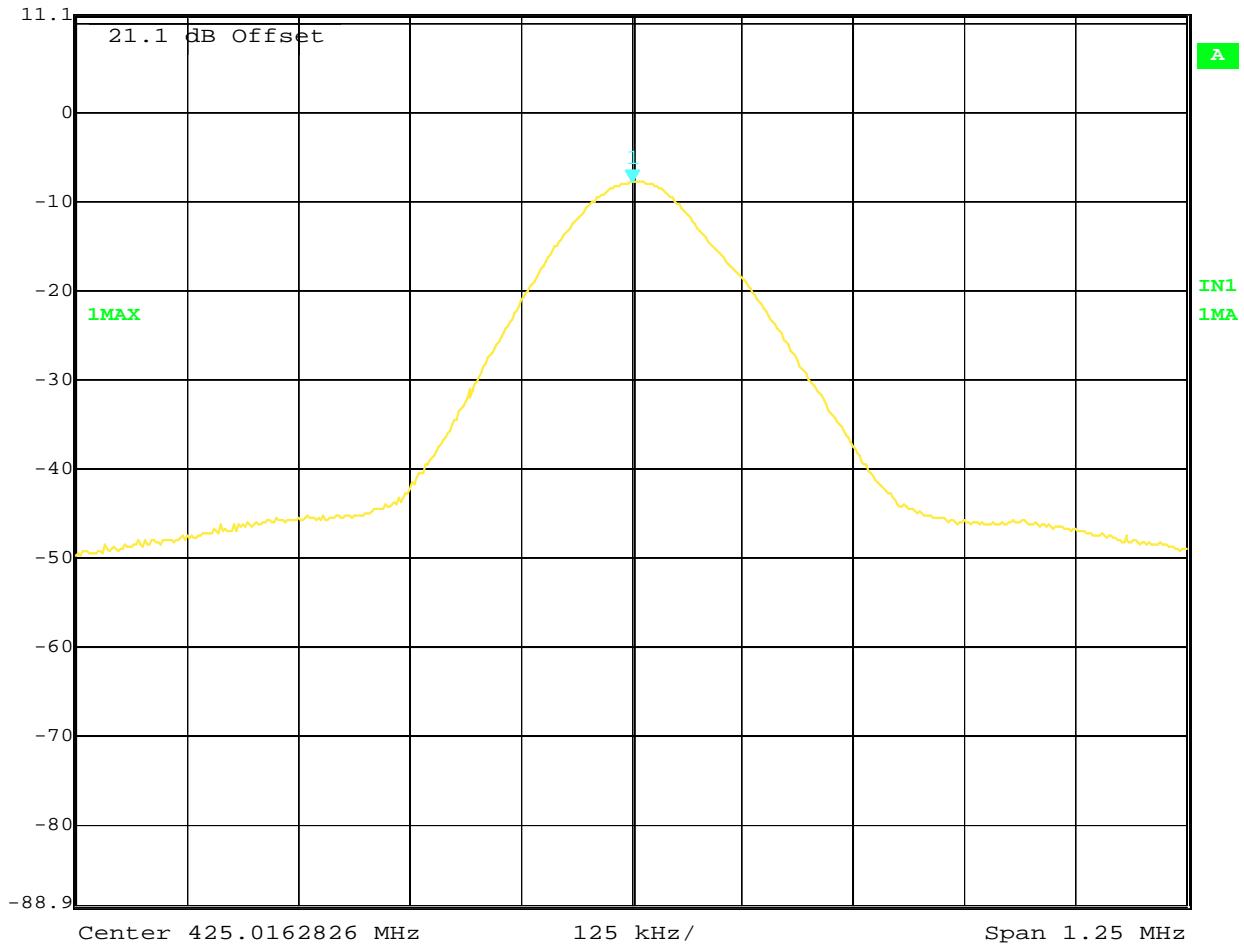


Z-Axis





Marker 1 [T1] RBW 120 kHz RF Att 10 dB
Ref Lvl -7.84 dBm VBW 300 kHz
11.1 dBm 425.01628257 MHz SWT 500 ms Unit dBm

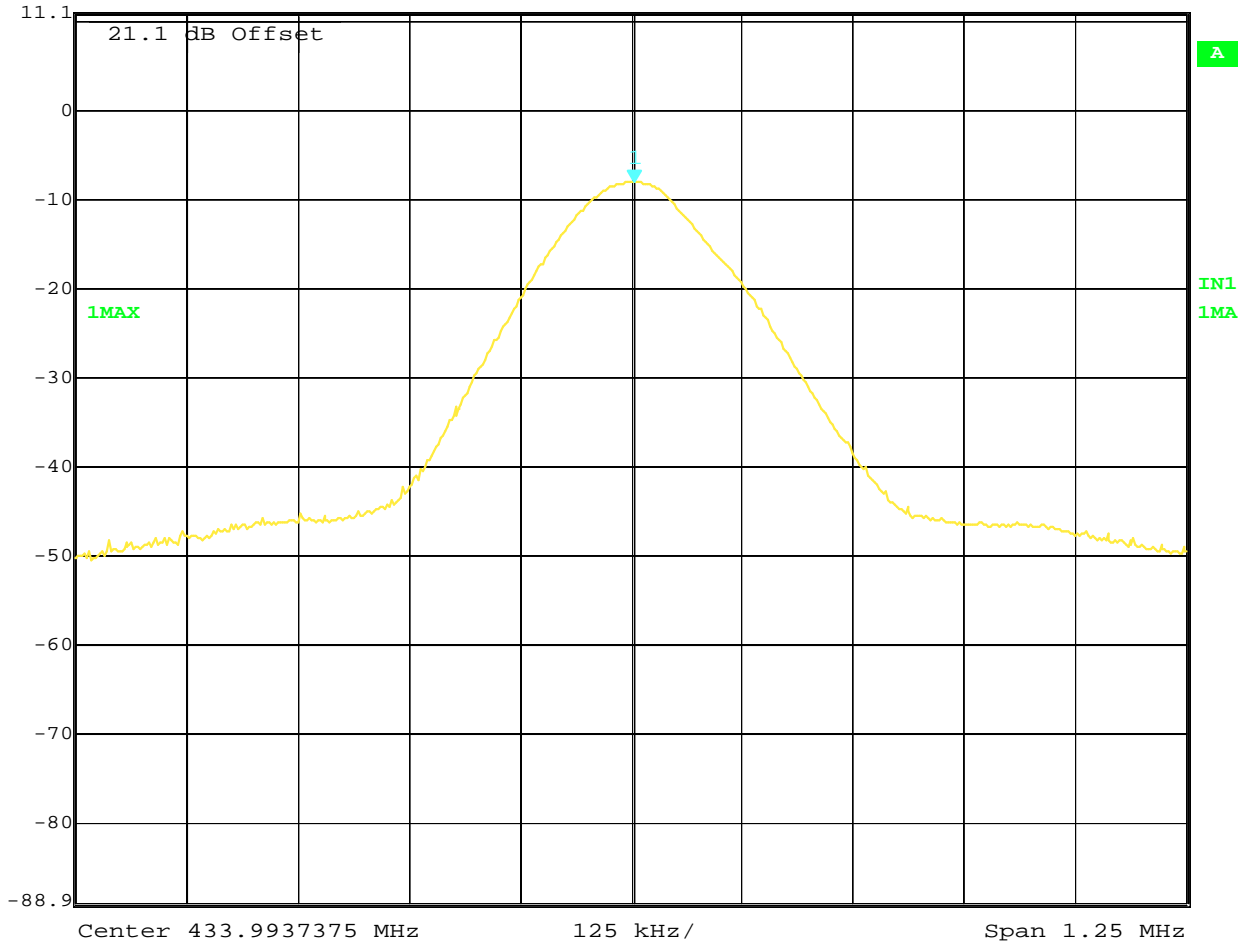


Date: 7.MAR.2015 06:26:40

Output power for frequency 425MHz is -7.84 d(Bm)



Marker 1 [T1] RBW 120 kHz RF Att 10 dB
Ref Lvl -8.02 dBm VBW 300 kHz
11.1 dBm 433.99749499 MHz SWT 500 ms Unit dBm

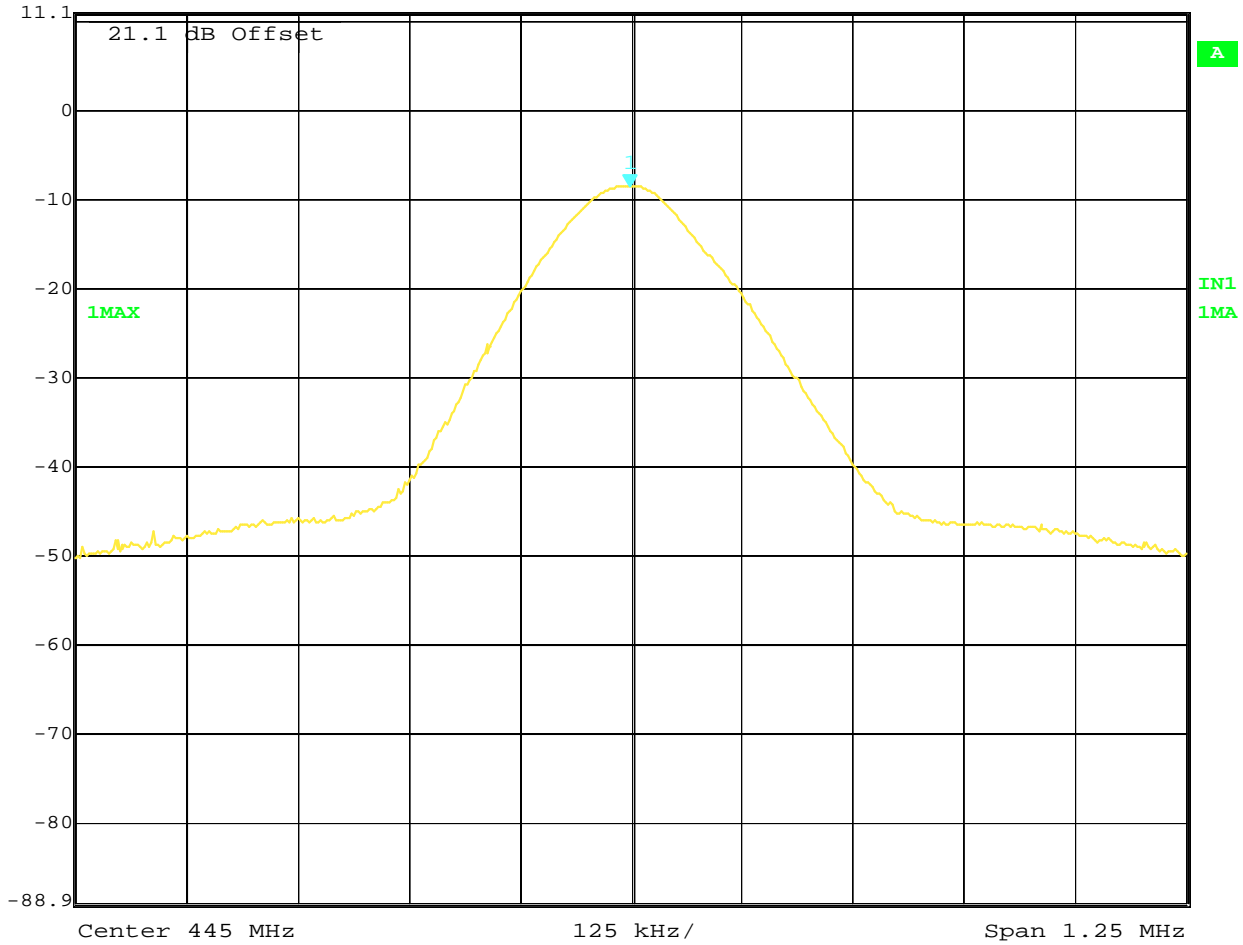


Date: 7.MAR.2015 06:28:07

Output power for frequency 434 MHz is -5.02 d(Bm)



Marker 1 [T1] RBW 120 kHz RF Att 10 dB
 Ref Lvl -8.47 dBm VBW 300 kHz
 11.1 dBm 444.99874749 MHz SWT 500 ms Unit dBm



Date: 7.MAR.2015 06:29:30

Output power for frequency 445 MHz is -8.47 d(Bm)

Test Personnel: Vathana Ven *VSV*
 Supervising/Reviewing
 Engineer:
 (Where Applicable) N/A
 Product Standard: FCC Part 15 Subpart C, RSS-210
 Input Voltage: Powered from 24VDC Host
 Pretest Verification w/
 Ambient Signals or
 BB Source: Ambient Signals

Test Date: 03/06/2015
 Limit Applied: Section 15.231(e)
 Ambient Temperature: See data tables
 Relative Humidity: See data tables
 Atmospheric Pressure: See data tables

Deviations, Additions, or Exclusions: None

7 Occupied Bandwidth

7.1 Method

Tests are performed in accordance with FCC 47CFR Part 15 Subpart C Section 15.231(c), ANSI C63.10, and RSS-Gen.

TEST SITE: 10m ALSE

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A wooden table 80 cm high is used for table-top equipment.

7.2 Test Equipment Used:

| Asset | Description | Manufacturer | Model | Serial | Cal Date | Cal Due |
|---------|--|-------------------|--------------------|-------------|------------|------------|
| 145128 | EMI Receiver (20 Hz - 40 Ghz) | Rohde & Schwarz | ESIB 40 | 839283/001 | 03/17/2014 | 03/17/2015 |
| 145-410 | Cables 145-400 145-403 145-405 145-406 145-407 | Huber + Suhner | 10m Track A Cables | multiple | 10/04/2014 | 10/04/2015 |
| 145106 | Bilog Antenna (30MHz - 5GHz) | Sunol Sciences | JB5 | A111003 | 10/24/2014 | 10/24/2015 |
| Dav004 | Weather Station | Davis Instruments | 7400 | PE80529A61A | 10/06/2014 | 10/06/2015 |

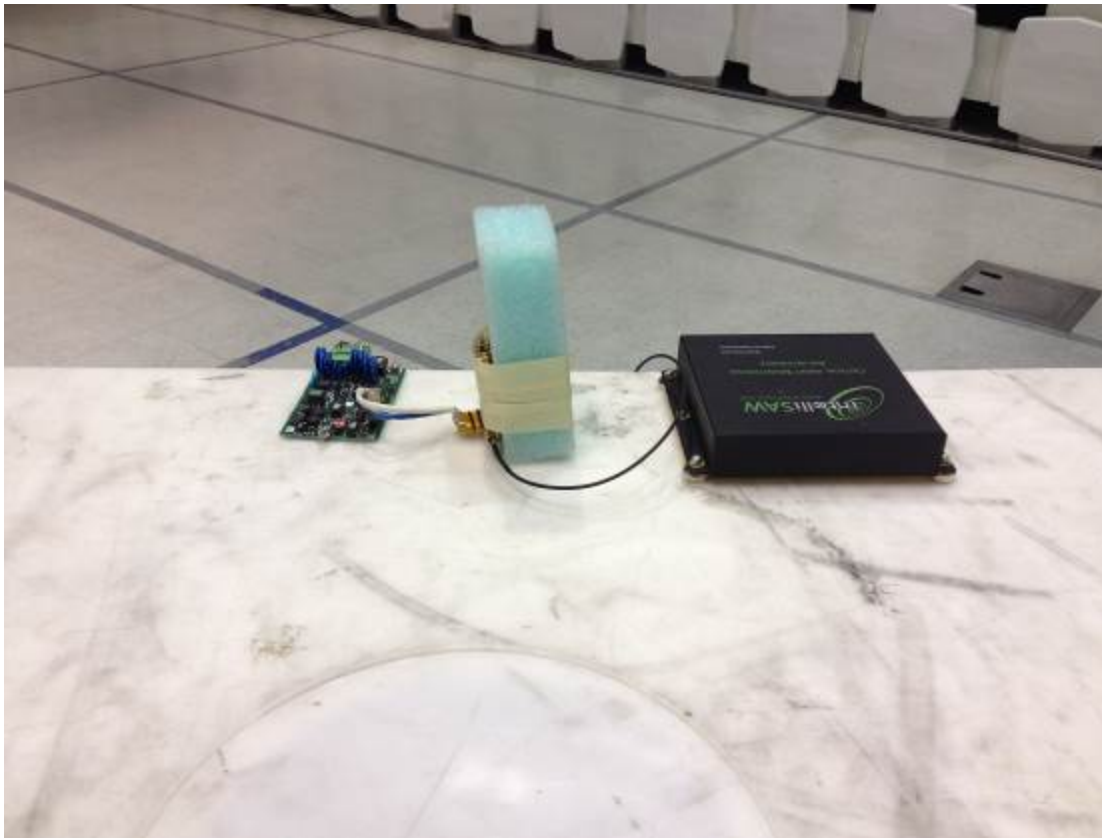
Software Utilized:

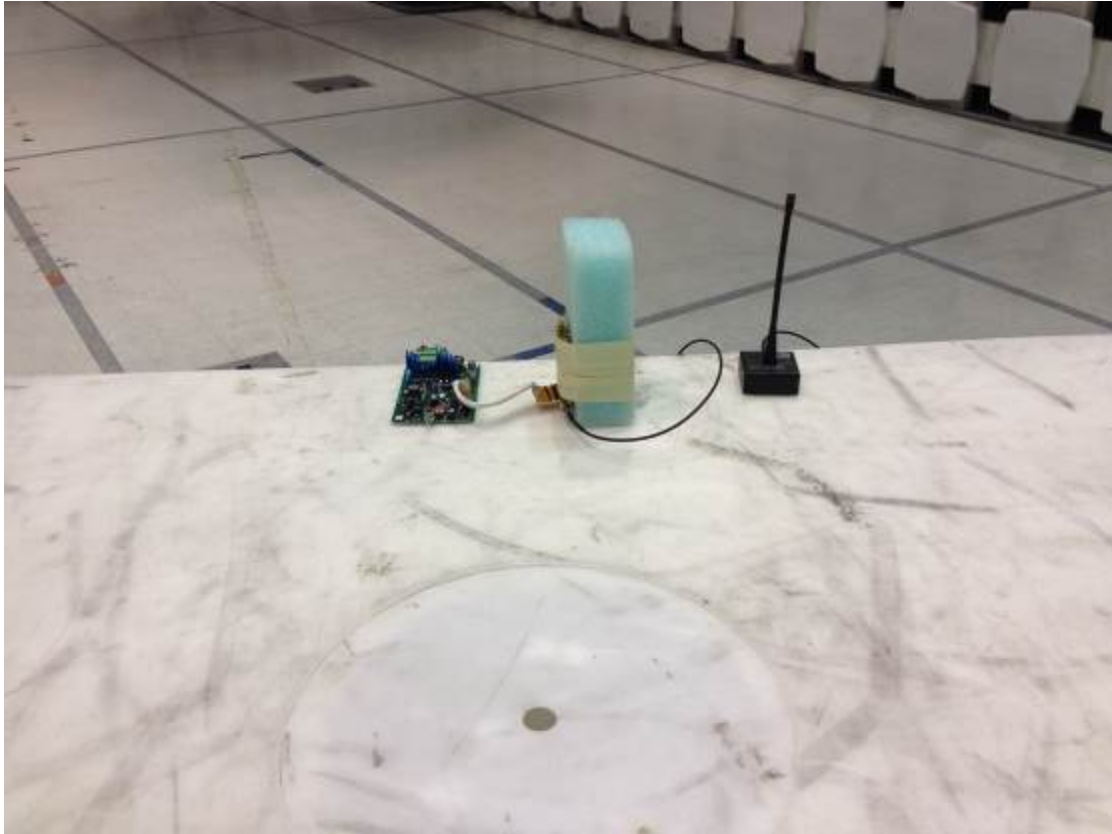
| Name | Manufacturer | Version |
|------|--------------|---------|
| None | | |

7.3 Results:

The sample tested was found to Comply. The bandwidth of the emission shall be no wider than 0.25% of the center frequency for devices operating above 70 MHz and below 900 MHz. For devices operating above 900 MHz, the emission shall be no wider than 0.5% of the center frequency. Bandwidth is determined at the points 20 dB down from the modulated carrier. Therefore the bandwidth must not exceed 1.06 MHz for 425 MHz, 1.09 MHz for 434 MHz, and 1.11 MHz for 445 MHz.

7.4 Setup Photographs:



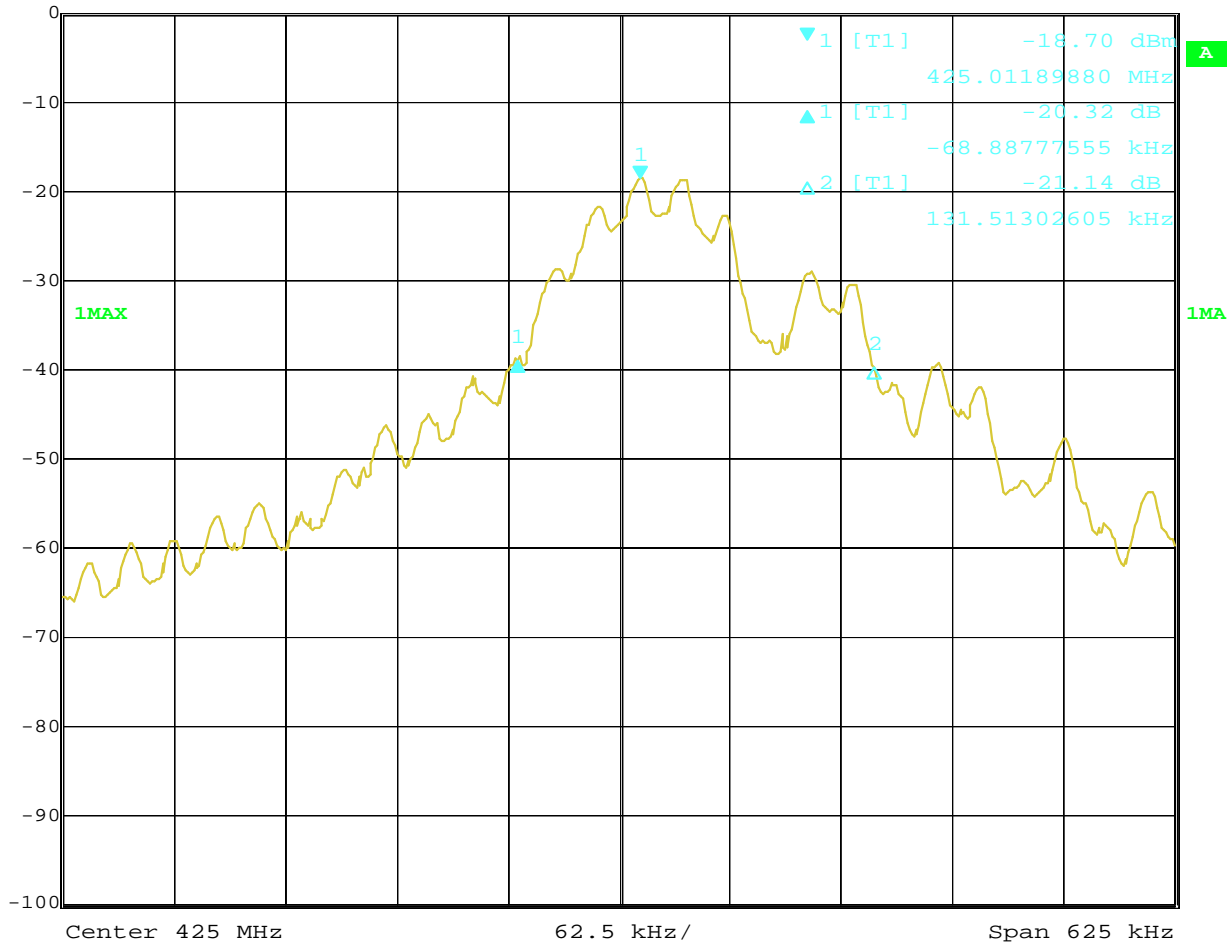


7.5 Plots/Data:

20 dB Bandwidth



| | | | | | |
|---------|------------------|-----|--------|--------|-------|
| Ref Lvl | Delta 1 [T1] | RBW | 10 kHz | RF Att | 10 dB |
| 0 dBm | -20.32 dB | VBW | 30 kHz | | |
| | -68.88777555 kHz | SWT | 16 ms | Unit | dBm |

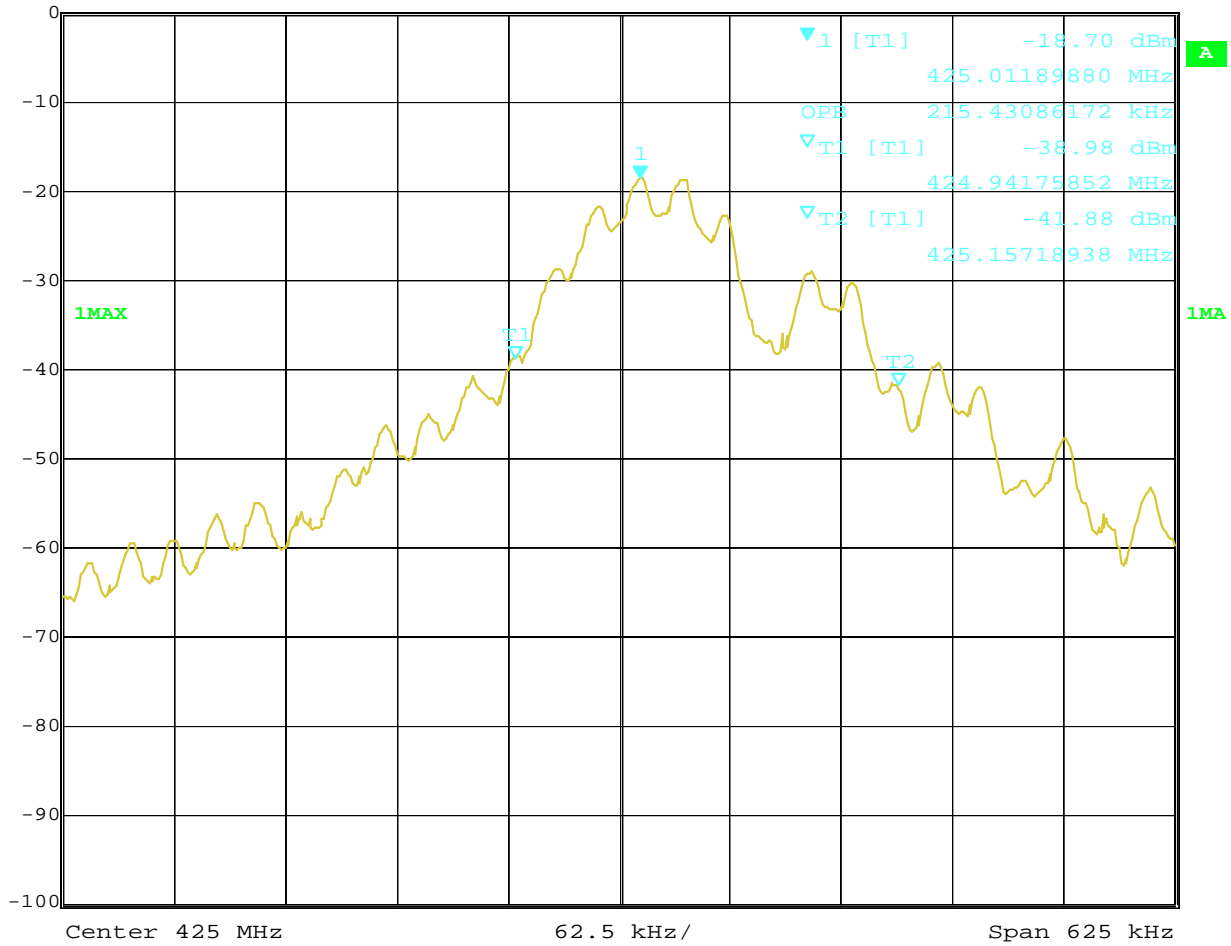


Date: 1.JAN.1997 00:37:26

99% Power Bandwidth



Marker 1 [T1] RBW 10 kHz RF Att 10 dB
Ref Lvl -18.70 dBm VBW 30 kHz
0 dBm 425.01189880 MHz SWT 16 ms Unit dBm

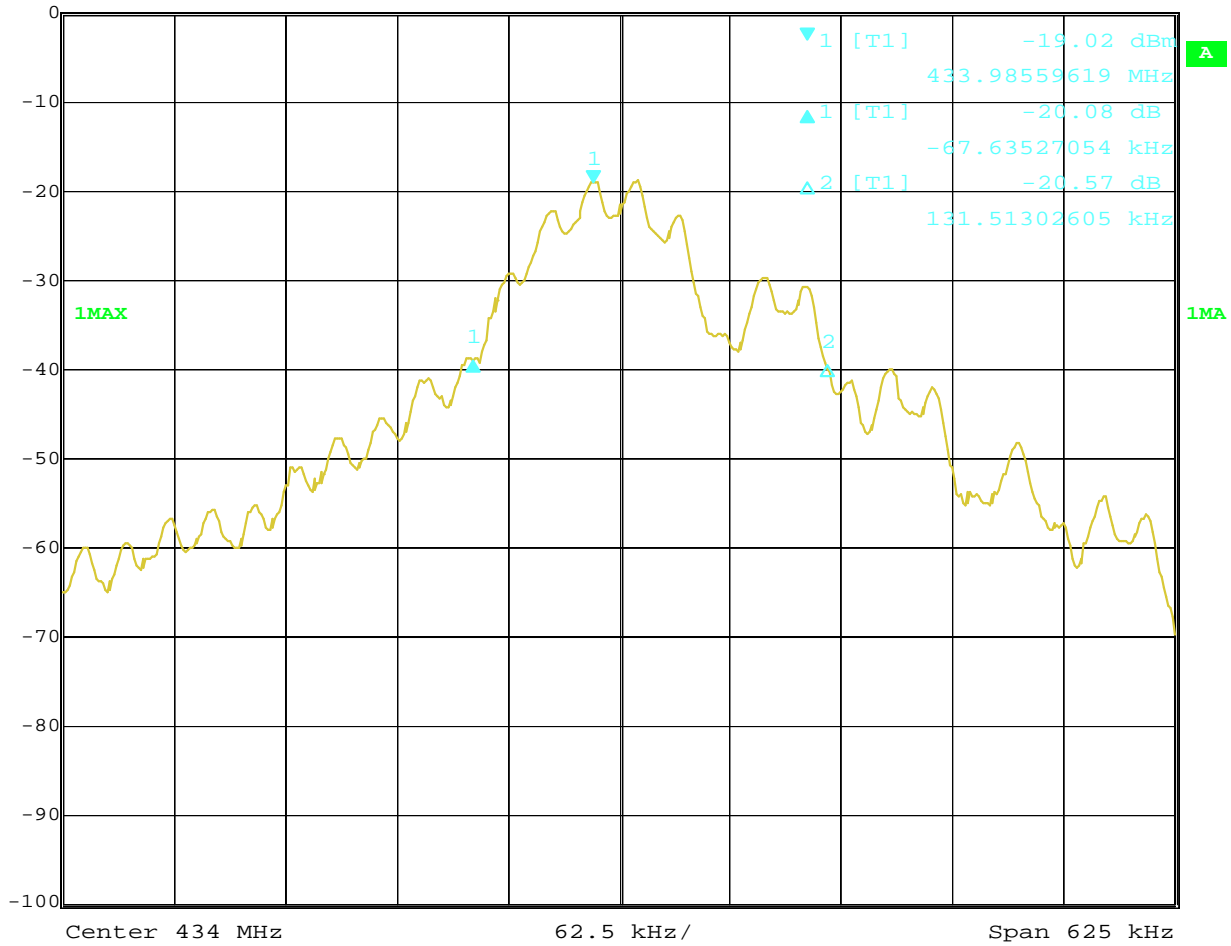


Date: 1.JAN.1997 00:38:05

20 dB Bandwidth



| | | | | | |
|---------|------------------|-----|--------|--------|-------|
| Ref Lvl | Delta 1 [T1] | RBW | 10 kHz | RF Att | 10 dB |
| 0 dBm | -20.08 dB | VBW | 30 kHz | | |
| | -67.63527054 kHz | SWT | 16 ms | Unit | dBm |

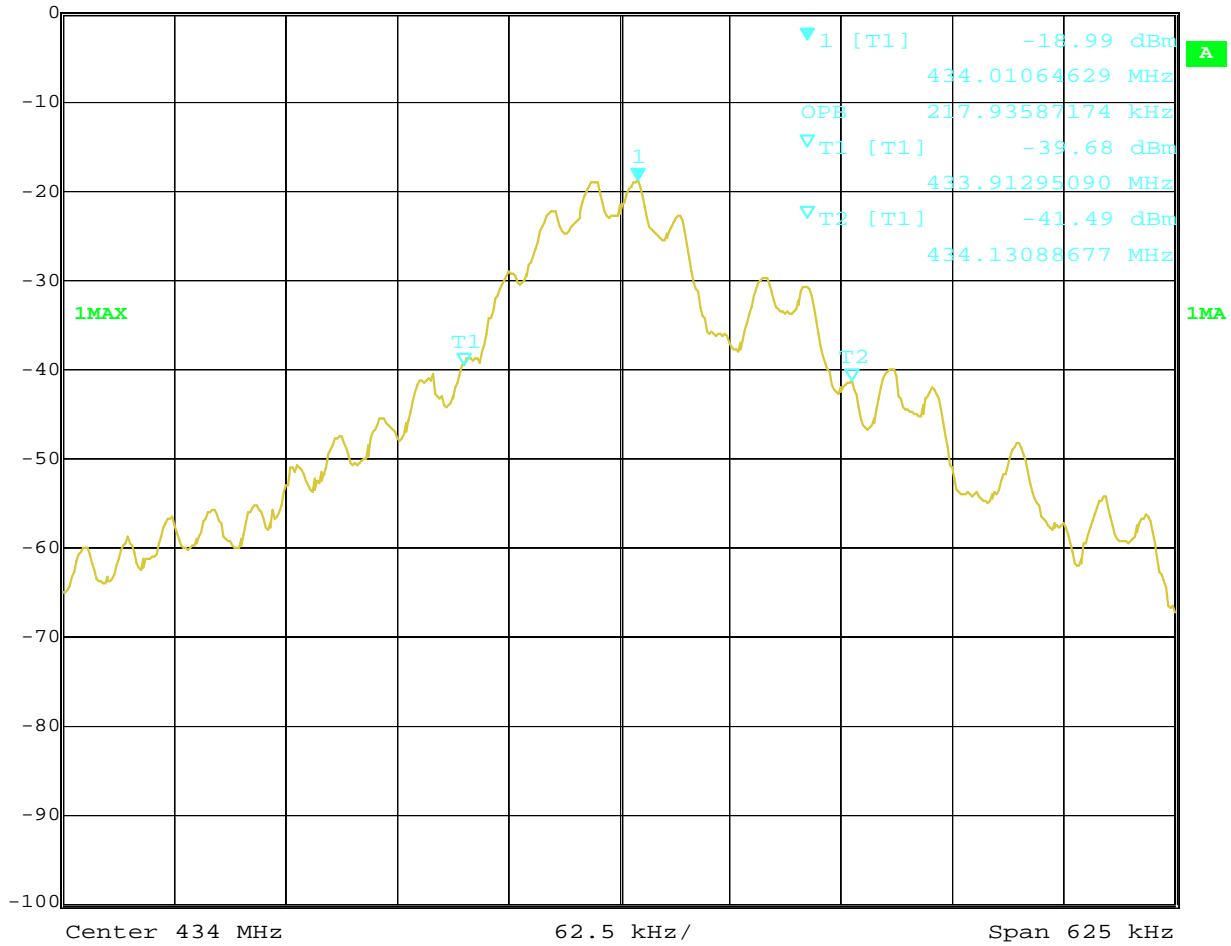


Date: 1.JAN.1997 00:34:45

99% Power Bandwidth



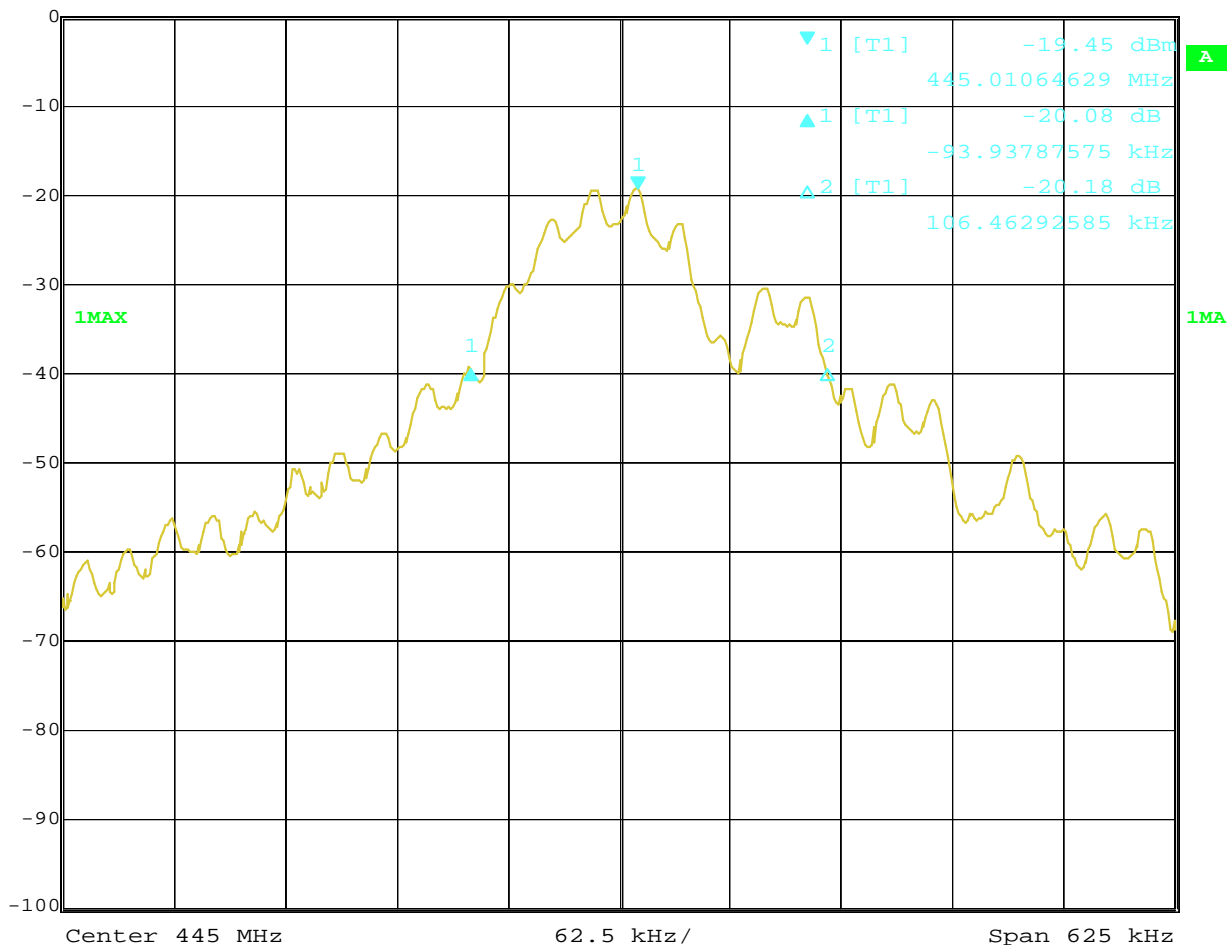
Marker 1 [T1] RBW 10 kHz RF Att 10 dB
Ref Lvl -18.99 dBm VBW 30 kHz
0 dBm 434.01064629 MHz SWT 16 ms Unit dBm



Date: 1.JAN.1997 00:35:40

20 dB Bandwidth

| | | | | | |
|---------|---------------------|-----|--------|--------|-------|
| | Delta 1 [T1] | RBW | 10 kHz | RF Att | 10 dB |
| Ref Lvl | -20.08 dB | VBW | 30 kHz | | |
| 0 dBm | -93.93787575 kHz | SWT | 16 ms | Unit | dBm |

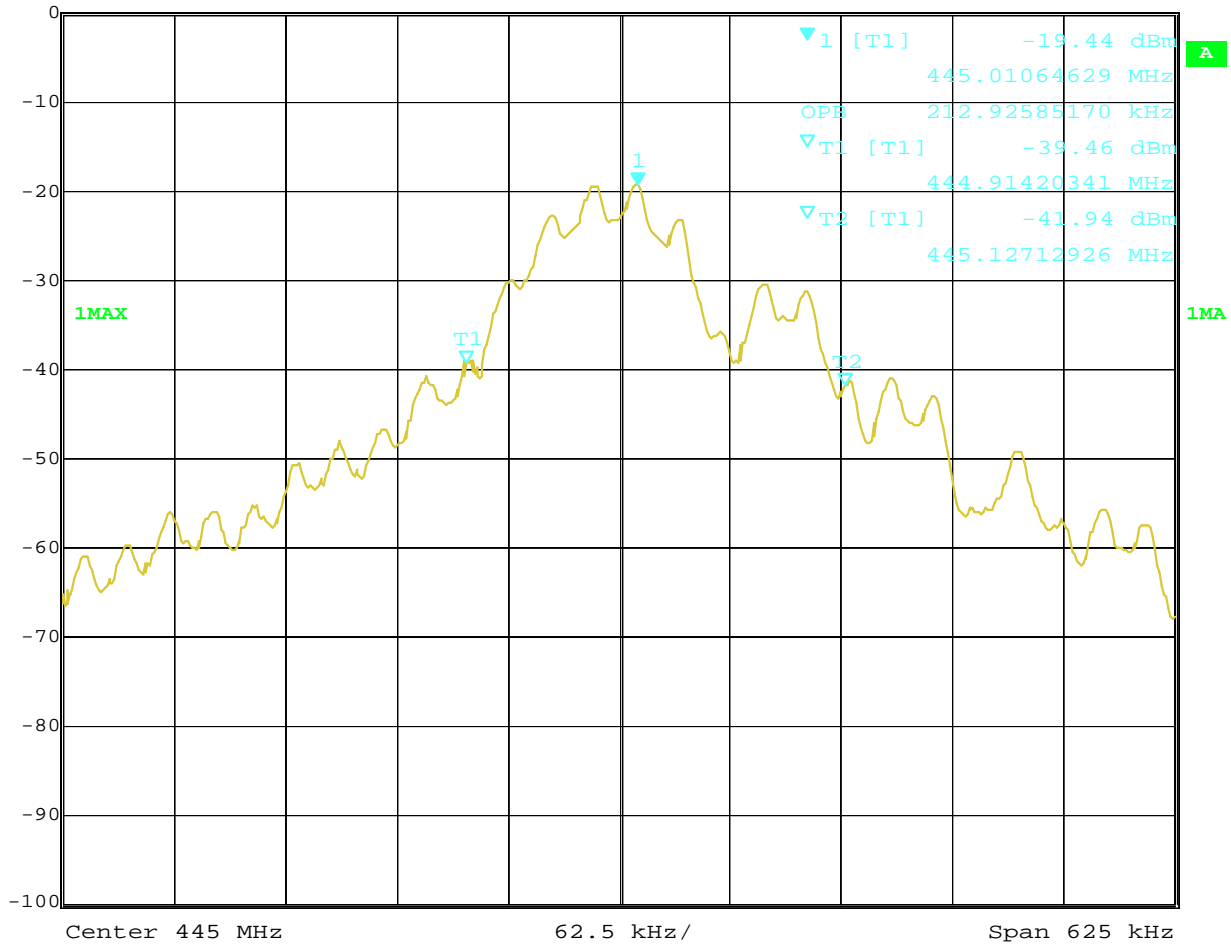


Date: 1.JAN.1997 00:39:18

99% Power Bandwidth



Marker 1 [T1] RBW 10 kHz RF Att 10 dB
 Ref Lvl -19.44 dBm VBW 30 kHz
 0 dBm 445.01064629 MHz SWT 16 ms Unit dBm



Date: 1.JAN.1997 00:39:57

| | |
|--|---|
| Test Personnel: <u>Vathana Ven <i>VSV</i></u> | Test Date: <u>02/26/2015</u> |
| Supervising/Reviewing Engineer: <u>N/A</u> | |
| (Where Applicable) Product Standard: <u>FCC Part 15 Subpart C, RSS-Gen</u> | Limit Applied: <u>Section 15.231(c)</u> |
| Input Voltage: <u>Powered from 24VDC Host</u> | |
| Pretest Verification w/ Ambient Signals or BB Source: <u>Ambient Signals</u> | Ambient Temperature: <u>22 °C</u> |
| | Relative Humidity: <u>10 %</u> |
| | Atmospheric Pressure: <u>1007 mbars</u> |

8 Radiated and Spurious Emissions

8.1 Method

Tests are performed in accordance with FCC 47CFR Part 15 Subpart C Section 15.231(e), ANSI C63.10, and RSS-210.

TEST SITE: 10m ALSE

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A wooden table 80 cm high is used for table-top equipment.

Measurement Uncertainty

For radiated emissions, U_{lab} (3.5 dB at 3m and 3.5 dB at 10m below 1 GHz, and 4.2 dB at 3m above 1 GHz) < U_{CISPR} (5.2 dB), which is the reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where

- FS = Field Strength in dB μ V/m
- RA = Receiver Amplitude (including preamplifier) in dB μ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

RA = 52.0 dB μ V
 AF = 7.4 dB/m
 CF = 1.6 dB
 AG = 29.0 dB
 FS = 32 dB μ V/m

To convert from dB μ V to μ V or mV the following was used:

$$UF = 10^{(NF / 20)} \text{ where } UF = \text{Net Reading in } \mu\text{V}$$

$$NF = \text{Net Reading in dB}\mu\text{V}$$

Example:

$$FS = RA + AF + CF - AG = 52.0 + 7.4 + 1.6 - 29.0 = 32.0$$

$$UF = 10^{(32 \text{ dB}\mu\text{V} / 20)} = 39.8 \mu\text{V/m}$$

8.2 Test Equipment Used:

| Asset | Description | Manufacturer | Model | Serial | Cal Date | Cal Due |
|----------------------|--|-------------------|--------------------|-------------|------------|------------|
| 145128 ¹ | EMI Receiver (20 Hz - 40 Ghz) | Rohde & Schwarz | ESIB 40 | 839283/001 | 03/17/2014 | 03/17/2015 |
| 145-410 ¹ | Cables 145-400 145-403 145-405 145-406 145-407 | Huber + Suhner | 10m Track A Cables | multiple | 10/04/2014 | 10/04/2015 |
| 145106 ¹ | Bilog Antenna (30MHz - 5GHz) | Sunol Sciences | JB5 | A111003 | 10/24/2014 | 10/24/2015 |
| Dav004 ¹ | Weather Station | Davis Instruments | 7400 | PE80529A61A | 10/06/2014 | 10/06/2015 |
| REA003 ¹ | 1GHz High Pass Filter | Reactel, Inc | 7HS-1G/10G-S11 | 06-1 | 12/30/2013 | 12/30/2015 |
| 145-416 ¹ | Cables 145-400 145-402 145-404 145-408 | Huber + Suhner | 3m Track B cables | multiple | 10/04/2014 | 10/04/2015 |
| 145014 ¹ | Preamplifier (1 GHz to 26.5 GHz) | Hewlett Packard | 8449B | 3008A00232 | 05/05/2014 | 05/05/2015 |
| ETS002 ¹ | 1-18GHz DRG Horn Antenna | ETS Lindgren | 3117 | 00143260 | 03/20/2014 | 03/20/2015 |

Software Utilized:

| Name | Manufacturer | Version |
|----------------|--------------|------------------|
| EMI Boxborough | Intertek | 8/27/2010 |
| C5 | TESEQ | Build 5.26.46.46 |

8.3 Results:

The sample tested was found to Comply.

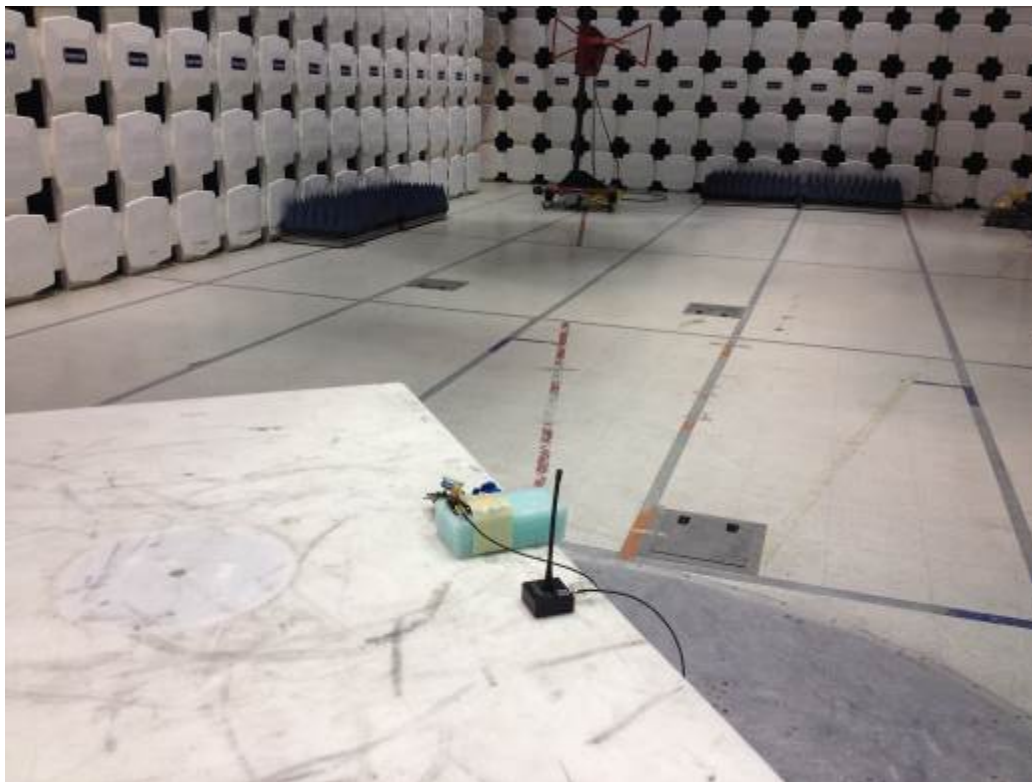
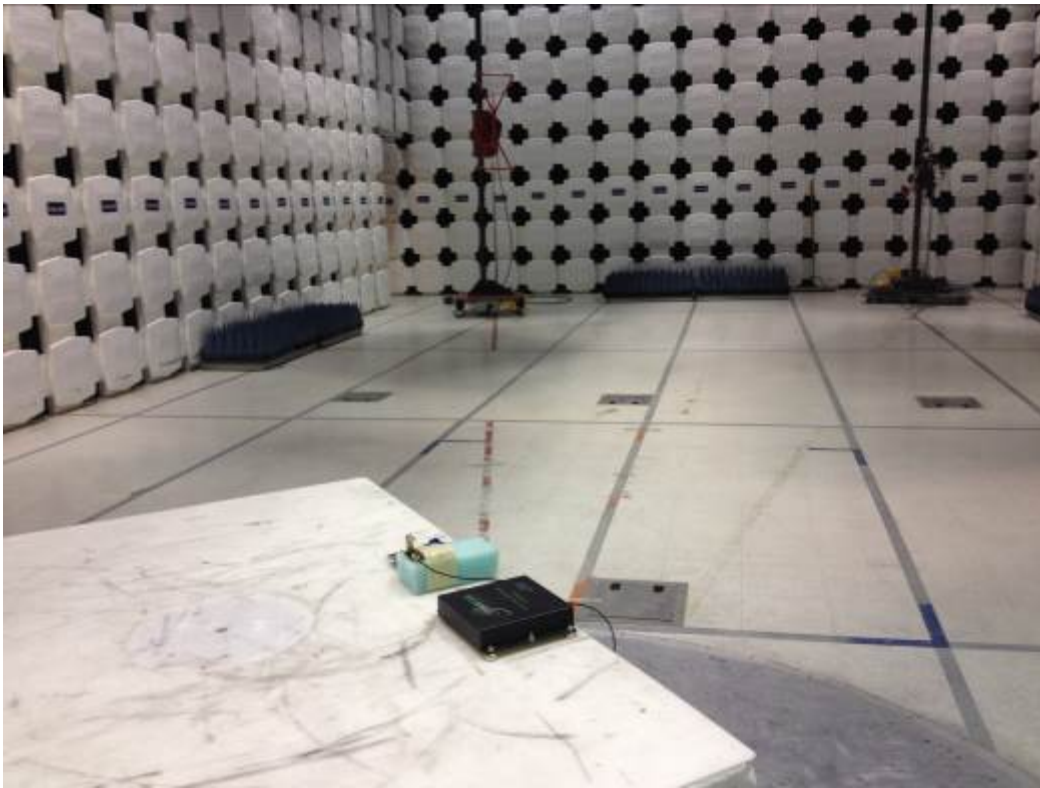
(e) Intentional radiators may operate at a periodic rate exceeding that specified in paragraph (a) of this section and may be employed for any type of operation, including operation prohibited in paragraph (a) of this section, provided the intentional radiator complies with the provisions of paragraphs (b) through (d) of this section, except the field strength table in paragraph (b) of this section is replaced by the following:

| Fundamental frequency (MHz) | Field strength of fundamental (microvolts/meter) | Field strength of spurious emission (microvolts/meter) |
|-----------------------------|--|--|
| 40.66-40.70 | 1,000 | 100 |
| 70-130 | 500 | 50 |
| 130-174 | 500 to 1,500 ¹ | 50 to 150 ¹ |
| 174-260 | 1,500 | 150 |
| 260-470 | 1,500 to 5,000 ¹ | 150 to 500 ¹ |
| Above 470 | 5,000 | 500 |

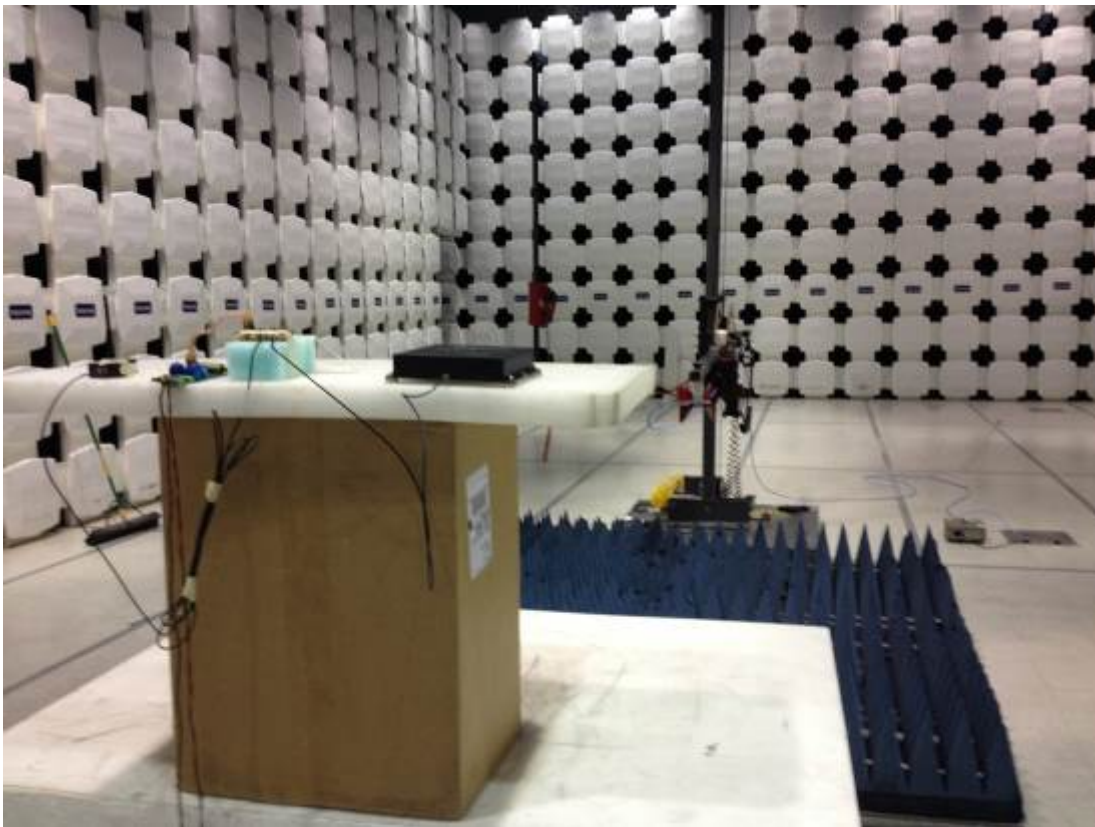
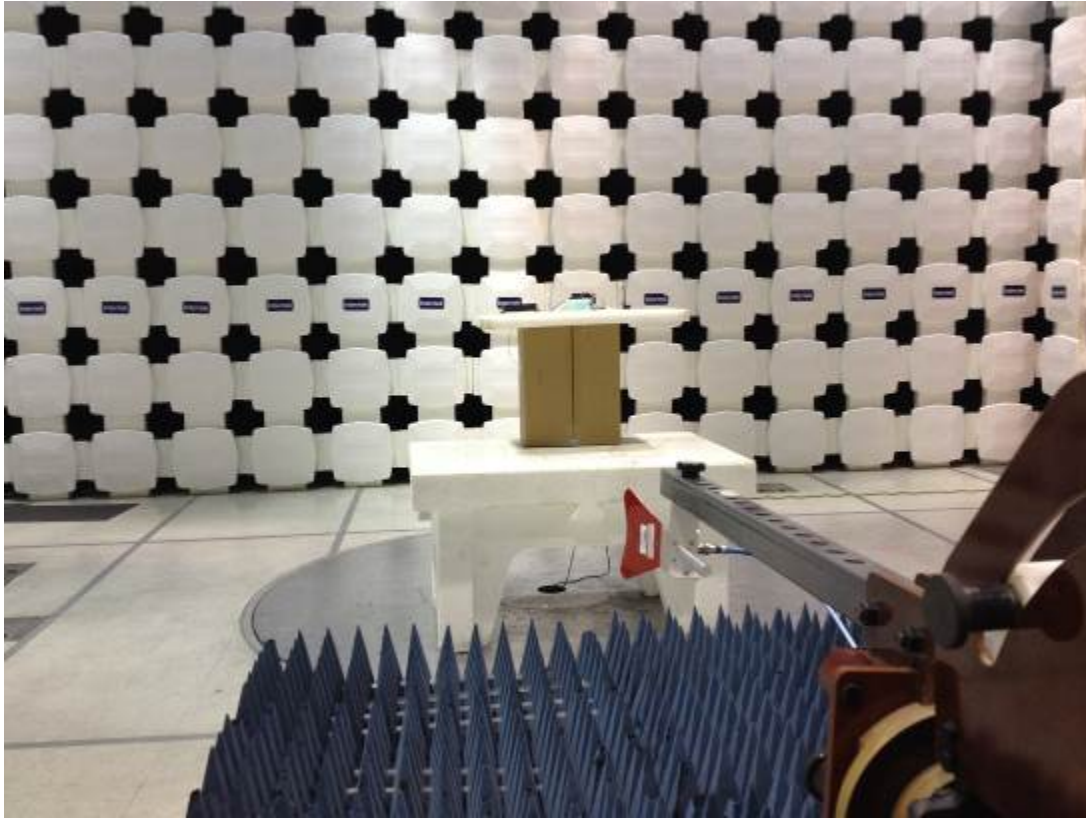
¹Linear interpolations.

8.4 Setup Photographs:

30 – 1000 MHz



1-4.5 GHz



Radiated Emissions

Company: Intellisaw
 Model #: 400.00152
 Serial #: 08150695
 Engineers: Vathana Ven
 Project #: G102014290
 Standard: FCC Part 15 Subpart C, 15.231e, RSS-210
 Receiver: R&S ESI (145-128) 03-17-2015
 PreAmp: NONE
 PreAmp Used? (Y or N): N
 Net = Reading (dBuV/m) + Antenna Factor (dB1/m) + Cable Loss (dB) - Preamp Factor (dB) - Distance Factor (dB)
 Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW

Antenna & Cables: N Bands: N, LF, HF, SHF
 Antenna: 145106 10mh 10-21-15.txt 145106 10mh 10-21-15.txt
 Cable(s): 145-410 10M Trunk & Cable 300 to 2 GHz REDUCED POINTS 10-04-15.txt NONE.
 Location: 10M Barometer: DAV004 Filter: NONE
 Date(s): 03/06/15
 Temp/Humidity/Pressure: 22 deg C 8% 1001 mB
 Limit Distance (m): 3
 Test Distance (m): 10
 Voltage/Frequency: 5VDC Frequency Range: 30-1000 MHz

| Detector Type | Ant. Pol. (V/H) | Frequency MHz | Reading dB(uV) | Antenna Factor dB(1/m) | Cable Loss dB | Pre-amp Factor dB | Distance Factor dB | Net dB(uV/m) | Limit dB(uV/m) | Margin dB | Bandwidth | FCC | IC |
|---|-----------------|---------------|----------------|------------------------|---------------|-------------------|--------------------|--------------|----------------|-----------|-------------|-------------|----|
| F = 434 MHz, X-Axis, PPS = 0 and PA = 2, Antenna (IA-MM-TPD, PIFA Patched Inverted F antenna) | | | | | | | | | | | | | |
| PK | V | 45.000 | 31.81 | 10.60 | 1.07 | 0.00 | -10.46 | 53.93 | 72.87 | -18.94 | 120/300 kHz | | |
| AVG | V | 45.000 | 12.00 | 10.60 | 1.07 | 0.00 | -10.46 | 34.12 | 52.87 | -18.75 | 120/300 kHz | | |
| PK | V | 64.985 | 12.30 | 7.90 | 1.28 | 0.00 | -10.46 | 31.94 | 72.87 | -40.93 | 120/300 kHz | Noise Floor | |
| AVG | V | 64.985 | -7.70 | 7.90 | 1.28 | 0.00 | -10.46 | 11.94 | 52.87 | -40.93 | 120/300 kHz | Noise Floor | |
| PK | V | 868.000 | 15.45 | 21.80 | 4.79 | 0.00 | -10.46 | 52.49 | 72.87 | -20.38 | 120/300 kHz | Noise Floor | |
| AVG | V | 868.000 | -4.55 | 21.80 | 4.79 | 0.00 | -10.46 | 32.49 | 52.87 | -20.38 | 120/300 kHz | Noise Floor | |
| F = 434 MHz, Y-Axis, PPS = 0 and PA = 2, Antenna (IA-MM-TPD, PIFA Patched Inverted F antenna) | | | | | | | | | | | | | |
| PK | V | 45.000 | 30.00 | 10.60 | 1.07 | 0.00 | -10.46 | 52.12 | 72.87 | -20.75 | 120/300 kHz | | |
| AVG | V | 45.000 | 10.00 | 10.60 | 1.07 | 0.00 | -10.46 | 32.12 | 52.87 | -20.75 | 120/300 kHz | | |
| PK | V | 64.985 | 35.00 | 7.90 | 1.28 | 0.00 | -10.46 | 54.64 | 72.87 | -18.23 | 120/300 kHz | | |
| AVG | V | 64.985 | 15.00 | 7.90 | 1.28 | 0.00 | -10.46 | 34.64 | 52.87 | -18.23 | 120/300 kHz | | |
| PK | V | 868.000 | 16.90 | 21.80 | 4.79 | 0.00 | -10.46 | 53.94 | 72.87 | -18.93 | 120/300 kHz | Noise Floor | |
| AVG | V | 868.000 | -3.10 | 21.80 | 4.79 | 0.00 | -10.46 | 33.94 | 52.87 | -18.93 | 120/300 kHz | Noise Floor | |
| F = 434 MHz, Z-Axis, PPS = 0 and PA = 2, Antenna (IA-MM-TPD, PIFA Patched Inverted F antenna) | | | | | | | | | | | | | |
| PK | V | 45.000 | 32.36 | 10.60 | 1.07 | 0.00 | -10.46 | 54.48 | 72.87 | -18.39 | 120/300 kHz | | |
| AVG | V | 45.000 | 12.36 | 10.60 | 1.07 | 0.00 | -10.46 | 34.48 | 52.87 | -18.39 | 120/300 kHz | | |
| PK | V | 64.985 | 32.65 | 7.90 | 1.28 | 0.00 | -10.46 | 52.29 | 72.87 | -20.58 | 120/300 kHz | | |
| AVG | V | 64.985 | 12.65 | 7.90 | 1.28 | 0.00 | -10.46 | 32.29 | 52.87 | -20.58 | 120/300 kHz | | |
| PK | V | 868.000 | 15.10 | 21.80 | 4.79 | 0.00 | -10.46 | 52.14 | 72.87 | -20.73 | 120/300 kHz | Noise Floor | |
| AVG | V | 868.000 | -4.90 | 21.80 | 4.79 | 0.00 | -10.46 | 32.14 | 52.87 | -20.73 | 120/300 kHz | Noise Floor | |

Radiated Emissions

| | |
|---|--|
| Company: Intellisaw | Antenna & Cables: N Bands: N, LF, HF, SHF |
| Model #: 400.00152 | Antenna: 145106 10mh 10-21-15.txt 145106 10mh 10-21-15.txt |
| Serial #: 08150695 | Cable(s): NONE. |
| Engineers: Vathana Ven | Location: 10M Barometer: DAV004 Filter: NONE |
| Project #: G102014290 | Date(s): 02/26/15 |
| Standard: FCC Part 15 Subpart C, 15.231e, RSS-210 | Temp/Humidity/Pressure: 22 deg C 8% 1001 mB |
| Receiver: R&S ESI (145-128) 03-17-2015 | Limit Distance (m): 3 |
| PreAmp: NONE. | Test Distance (m): 10 |
| PreAmp Used? (Y or N): N | Voltage/Frequency: 5VDC Frequency Range: 30-1000 MHz |
| Net = Reading (dBuV/m) + Antenna Factor (dB1/m) + Cable Loss (dB) - Preamp Factor (dB) - Distance Factor (dB) | |
| Peak: PK Quasi-Peak: QP Average: AVG RMS: RMS; NF = Noise Floor, RB = Restricted Band; Bandwidth denoted as RBW/VBW | |

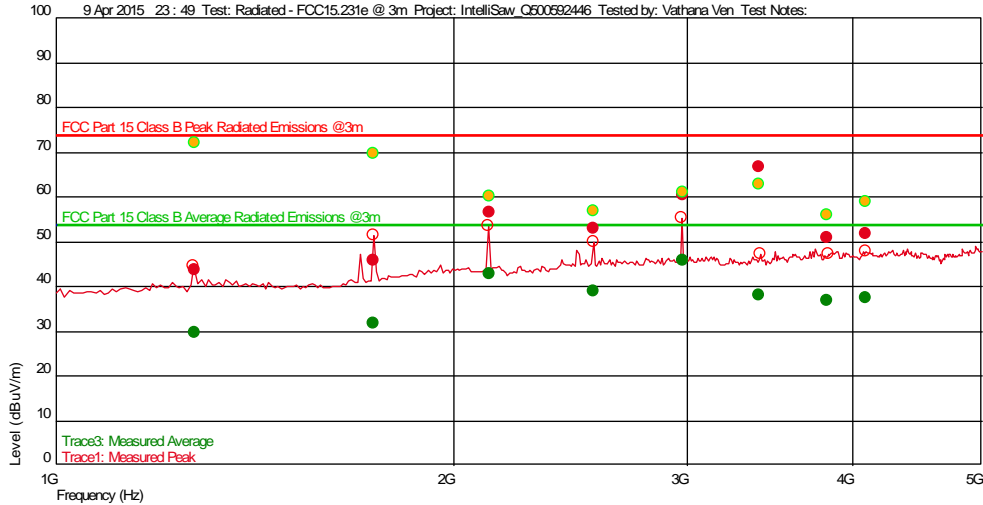
| Detector Type | Ant. Pol. (V/H) | Frequency MHz | Reading dB(uV) | Antenna Factor dB(1/m) | Cable Loss dB | Pre-amp Factor dB | Distance Factor dB | Net dB(uV/m) | Limit dB(uV/m) | Margin dB | Bandwidth | FCC |
|---|-----------------|---------------|----------------|------------------------|---------------|-------------------|--------------------|--------------|----------------|-----------|-------------|-------------|
| F = 445 MHz, X-Axis, PPS = 0 and PA = 2, Antenna (IA-MM-TPD, PIFA Patched Inverted F antenna) | | | | | | | | | | | | |
| PK | V | 45.000 | 30.90 | 10.60 | 1.07 | 0.00 | -10.46 | 53.02 | 73.22 | -20.20 | 120/300 kHz | |
| AVG | V | 45.000 | 10.90 | 10.60 | 1.07 | 0.00 | -10.46 | 33.02 | 53.22 | -20.20 | 120/300 kHz | |
| PK | V | 54.990 | 32.57 | 7.00 | 1.18 | 0.00 | -10.46 | 51.21 | 73.22 | -22.01 | 120/300 kHz | |
| AVG | V | 54.990 | 12.57 | 7.00 | 1.18 | 0.00 | -10.46 | 31.21 | 53.22 | -22.01 | 120/300 kHz | |
| PK | V | 890.000 | 15.00 | 21.90 | 4.82 | 0.00 | -10.46 | 52.17 | 73.22 | -21.05 | 120/300 kHz | Noise Floor |
| AVG | V | 890.000 | -5.00 | 21.90 | 4.82 | 0.00 | -10.46 | 32.17 | 53.22 | -21.05 | 120/300 kHz | Noise Floor |
| F = 445 MHz, Y-Axis, PPS = 0 and PA = 2, Antenna (IA-MM-TPD, PIFA Patched Inverted F antenna) | | | | | | | | | | | | |
| PK | V | 45.000 | 32.55 | 10.60 | 1.07 | 0.00 | -10.46 | 54.67 | 73.22 | -18.55 | 120/300 kHz | |
| AVG | V | 45.000 | 12.55 | 10.60 | 1.07 | 0.00 | -10.46 | 34.67 | 53.22 | -18.55 | 120/300 kHz | |
| PK | V | 64.985 | 31.00 | 7.90 | 1.28 | 0.00 | -10.46 | 50.64 | 73.22 | -22.58 | 120/300 kHz | |
| AVG | V | 64.985 | 11.00 | 7.90 | 1.28 | 0.00 | -10.46 | 30.64 | 53.22 | -22.58 | 120/300 kHz | |
| PK | V | 890.000 | 16.29 | 21.90 | 4.82 | 0.00 | -10.46 | 53.46 | 73.22 | -19.76 | 120/300 kHz | Noise Floor |
| AVG | V | 890.000 | -3.71 | 21.90 | 4.82 | 0.00 | -10.46 | 33.46 | 53.22 | -19.76 | 120/300 kHz | Noise Floor |
| F = 445 MHz, Z-Axis, PPS = 0 and PA = 2, Antenna (IA-MM-TPD, PIFA Patched Inverted F antenna) | | | | | | | | | | | | |
| PK | V | 45.000 | 32.12 | 10.60 | 1.07 | 0.00 | -10.46 | 54.24 | 73.22 | -18.98 | 120/300 kHz | |
| AVG | V | 45.000 | 12.12 | 10.60 | 1.07 | 0.00 | -10.46 | 34.24 | 53.22 | -18.98 | 120/300 kHz | |
| PK | V | 64.985 | 31.00 | 7.90 | 1.28 | 0.00 | -10.46 | 50.64 | 73.22 | -22.58 | 120/300 kHz | |
| AVG | V | 64.985 | 11.00 | 7.90 | 1.28 | 0.00 | -10.46 | 30.64 | 53.22 | -22.58 | 120/300 kHz | |
| PK | V | 890.000 | 20.00 | 21.90 | 4.82 | 0.00 | -10.46 | 57.17 | 73.22 | -16.05 | 120/300 kHz | Noise Floor |
| AVG | V | 890.000 | 0.00 | 21.90 | 4.82 | 0.00 | -10.46 | 37.17 | 53.22 | -16.05 | 120/300 kHz | Noise Floor |

1-4.5 GHz

Test Information

| | | |
|---------------|--|------------------------|
| Test Details | User Entry | Additional Information |
| Test: | Radiated – RSS-210 @ 3m | |
| Project: | IntelliSaw_Q500592446 | |
| Test Notes: | 120VAC/60Hz, 425 MHz both antennas, X-Axis, worst-case | |
| Temperature: | 21 deg C | |
| Humidity: | 29%, 1017 mB | |
| Tested by: | Vathana Ven | |
| Test Started: | 9 Apr 2015 23 : 49 | |

Prescan Emission Graph



- | | |
|---------------------------------------|-------------------------|
| ● Measured Peak Value | — Swept Peak Data |
| ● Measured Quasi Peak Value | — Swept Quasi Peak Data |
| ● Measured Average Value | — Swept Average Data |
| ● Maximum Value of Mast and Turntable | |

Emissions Test Data

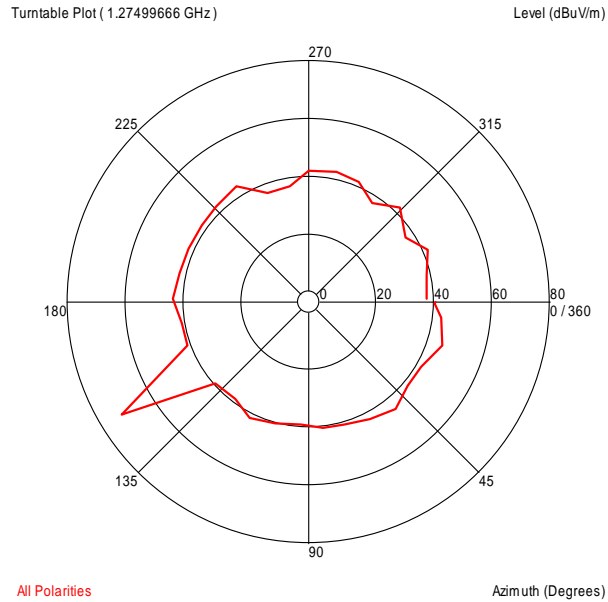
Trace1: Measured Peak

| Frequency (Hz) | Level (dBuV/m) | AF | PA+CL | Limit (dBuV/m) | Margin (dBuV/m) | Hor (--), Ver () | Azimuth (deg)(Deg) | Mast Height(m) | RBW(Hz) | Comment |
|----------------|----------------|--------|---------|----------------|-----------------|-----------------------|--------------------|----------------|---------|---------|
| 1.27499666 G | 43.65 | 28.685 | -27.800 | 72.570 | -28.92 | -- | 160 | 1.53 | 1 M | |
| 1.738383434 G | 45.68 | 29.339 | -26.815 | 72.570 | -26.89 | | 109 | 2.40 | 1 M | |
| 3.829144957 G | 50.83 | 33.594 | -23.933 | 72.570 | -21.74 | | 333 | 1.20 | 1 M | |
| 4.093934536 G | 51.82 | 33.463 | -23.194 | 72.570 | -20.75 | -- | 164 | 2.51 | 1 M | |
| 2.55011356 G | 52.92 | 32.515 | -25.850 | 72.570 | -19.65 | -- | 28 | 2.88 | 1 M | |
| 2.12510354 G | 56.66 | 31.269 | -26.015 | 72.570 | -15.91 | -- | 266 | 2.05 | 1 M | |
| 2.975317301 G | 60.52 | 32.905 | -25.127 | 72.570 | -12.05 | -- | 51 | 2.30 | 1 M | |
| 3.40008016 G | 66.86 | 32.966 | -24.908 | 72.570 | -5.71 | -- | 105 | 2.17 | 1 M | |

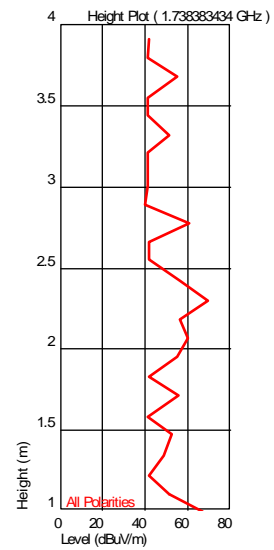
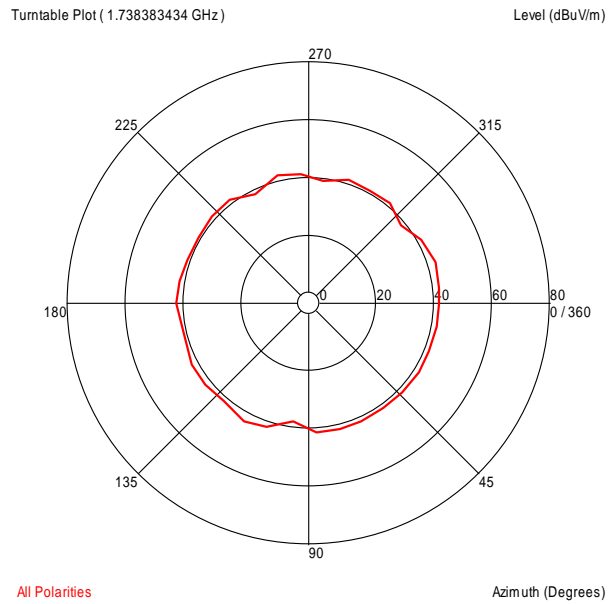
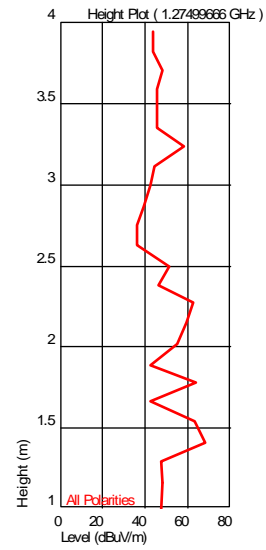
Trace3: Measured Average

| Frequency (Hz) | Level (dBuV/m) | AF | PA+CL | Limit (dBuV/m) | Margin(dBuV/m) | Hor (--), Ver () | Azimuth (deg)(Deg) | Mast Height(m) | RBW(Hz) | Comment |
|----------------|----------------|--------|---------|----------------|----------------|-----------------------|--------------------|----------------|---------|---------|
| 1.27499666 G | 23.65 | 28.685 | -27.800 | 52.570 | -28.92 | -- | 160 | 1.53 | 1 M | |
| 1.738383434 G | 25.68 | 29.339 | -26.815 | 52.570 | -26.89 | | 109 | 2.40 | 1 M | |
| 3.829144957 G | 30.83 | 33.594 | -23.933 | 52.570 | -21.74 | | 333 | 1.20 | 1 M | |
| 4.093934536 G | 31.82 | 33.463 | -23.194 | 52.570 | -20.75 | -- | 164 | 2.51 | 1 M | |
| 2.55011356 G | 32.92 | 32.515 | -25.850 | 52.570 | -19.65 | -- | 28 | 2.88 | 1 M | |
| 2.12510354 G | 36.66 | 31.269 | -26.015 | 52.570 | -15.91 | -- | 266 | 2.05 | 1 M | |
| 2.975317301 G | 40.52 | 32.905 | -25.127 | 52.570 | -12.05 | -- | 51 | 2.30 | 1 M | |
| 3.40008016 G | 46.86 | 32.966 | -24.908 | 52.570 | -5.71 | -- | 105 | 2.17 | 1 M | |

Azimuth Plots

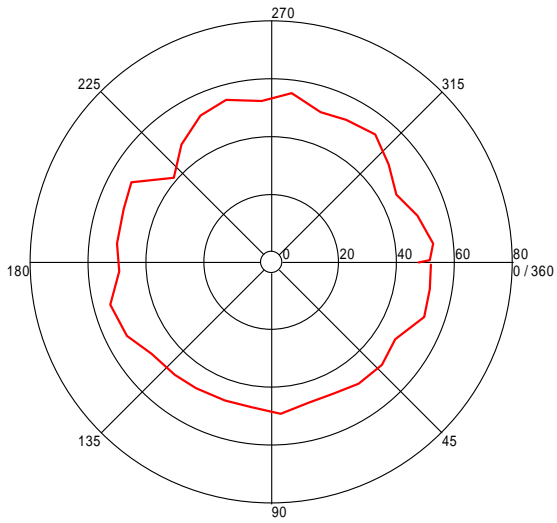


Turntable Plots



Turntable Plot (2.12510354 GHz)

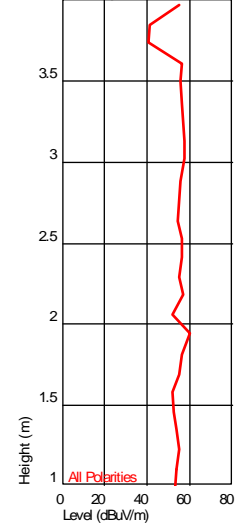
Level (dBuV/m)



All Polarities

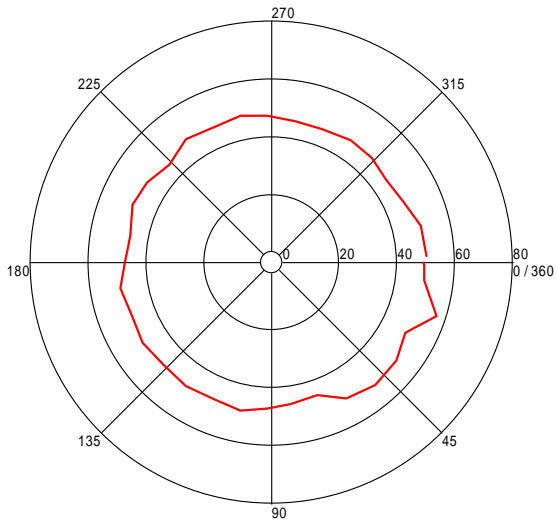
Azimuth (Degrees)

Height Plot (2.12510354 GHz)



Turntable Plot (2.55011356 GHz)

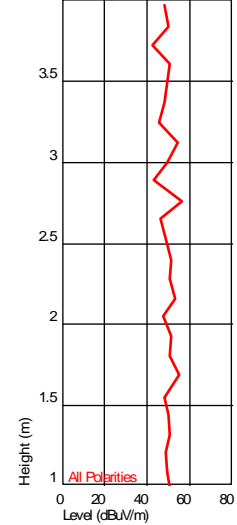
Level (dBuV/m)



All Polarities

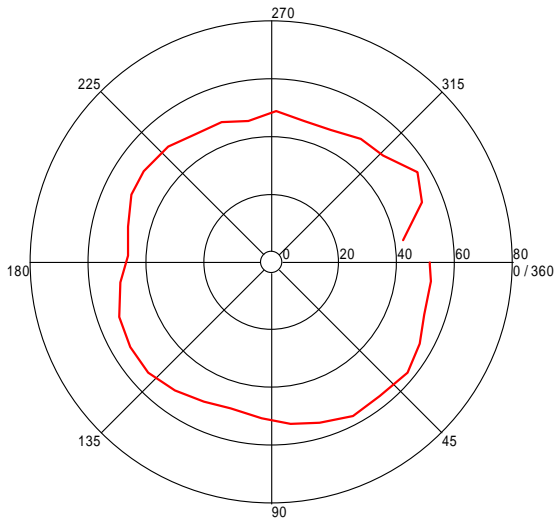
Azimuth (Degrees)

Height Plot (2.55011356 GHz)



Turntable Plot (2.975317301 GHz)

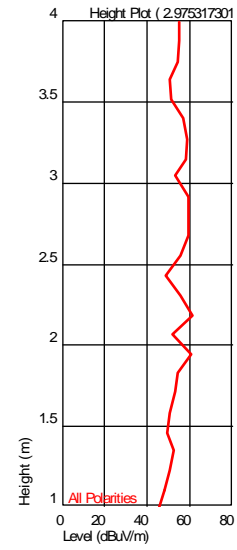
Level (dBuV/m)



All Polarities

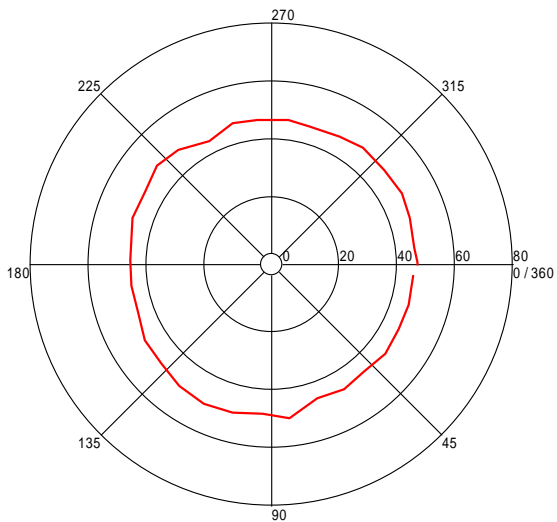
Azimuth (Degrees)

Height Plot (2.975317301 GHz)



Turntable Plot (3.40008016 GHz)

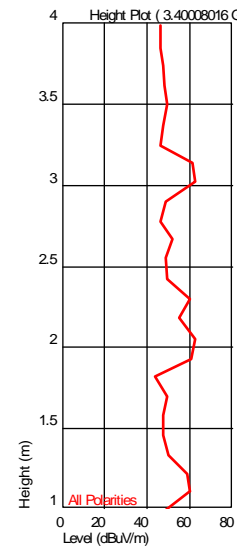
Level (dBuV/m)



All Polarities

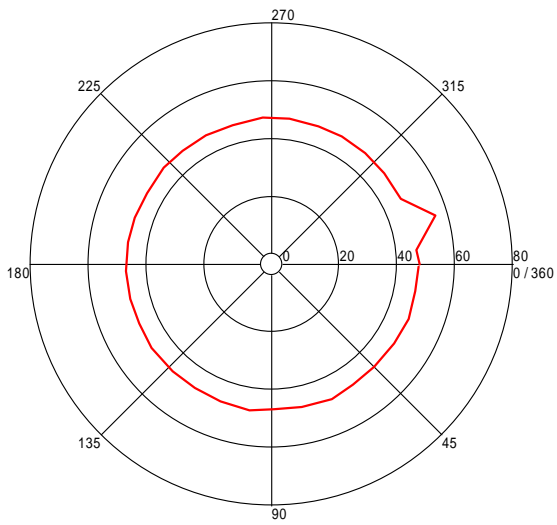
Azimuth (Degrees)

Height Plot (3.40008016 GHz)



Turntable Plot (3.829144957 GHz)

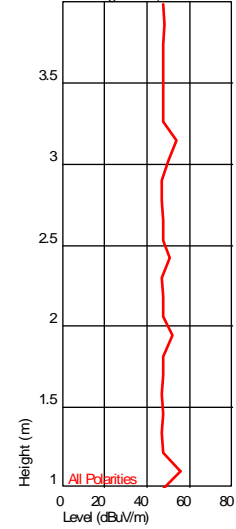
Level (dBuV/m)



All Polarities

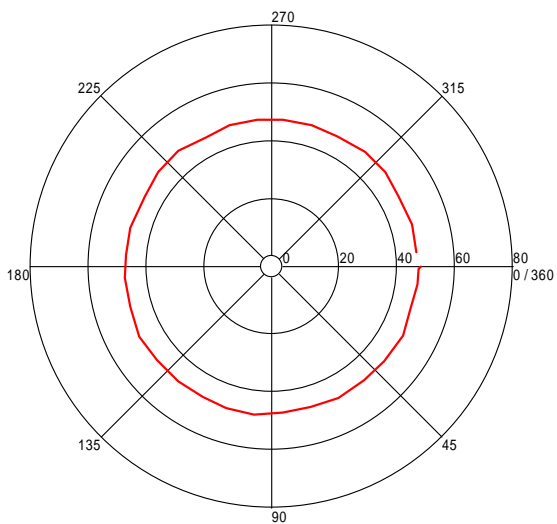
Azimuth (Degrees)

Height Plot (3.829144957 GHz)



Turntable Plot (4.093934536 GHz)

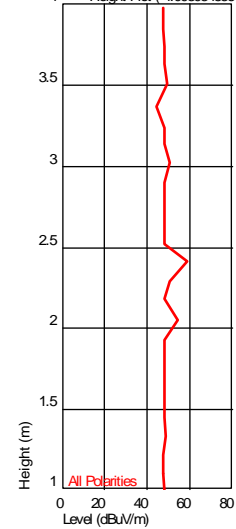
Level (dBuV/m)



All Polarities

Azimuth (Degrees)

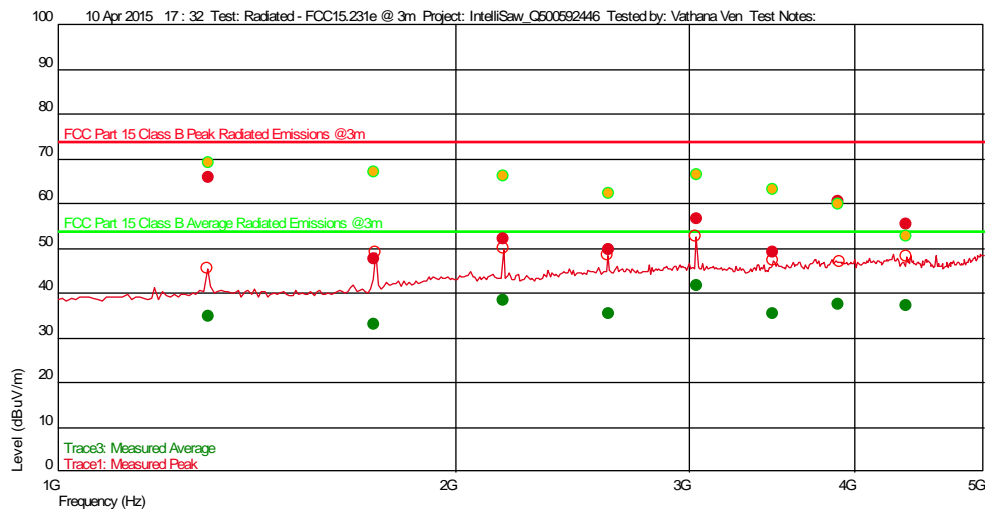
Height Plot (4.093934536 GHz)



Test Information

Test Details User Entry Additional Information
 Test: Radiated - RSS210 @ 3m
 Project: IntelliSaw_Q500592446
 Test Notes: 120VAC/60Hz, Both antennas, 434 MHz, X-Axis, worst-case
 Temperature: 21 deg C
 Humidity: 38%, 994 mB
 Tested by: Vathana Ven
 Test Started: 10 Apr 2015 17 : 32

Prescan Emission Graph



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable
- Swept Peak Data
- Swept Quasi Peak Data
- Swept Average Data

Emissions Test Data

Trace1: Measured Peak

| Frequency (Hz) | Level (dBuV/m) | AF | PA+CL | Limit (dBuV/m) | Margin (dBuV/m) | Hor (--), Ver () | Azimuth (deg)(Deg) | Mast Height(m) | RBW(Hz) | Comment |
|----------------|----------------|--------|---------|----------------|-----------------|-----------------------|--------------------|----------------|---------|---------|
| 1.736212425 G | 47.53 | 29.318 | -26.823 | 72.870 | -25.34 | | 30 | 2.76 | 1 M | |
| 3.473132933 G | 49.00 | 32.984 | -24.905 | 72.870 | -23.87 | | 0 | 1.09 | 1 M | |
| 2.606800267 G | 49.81 | 32.588 | -25.681 | 72.870 | -23.06 | | 8 | 1.80 | 1 M | |
| 2.169899799 G | 52.13 | 31.286 | -25.971 | 72.870 | -20.74 | -- | 292 | 1.32 | 1 M | |
| 4.377682031 G | 55.31 | 33.626 | -23.629 | 72.870 | -17.56 | -- | 21 | 2.53 | 1 M | |
| 3.037822311 G | 56.68 | 32.966 | -25.105 | 72.870 | -16.19 | | 287 | 2.04 | 1 M | |
| 3.890567802 G | 60.50 | 33.670 | -23.781 | 72.870 | -12.37 | -- | 360 | 1.09 | 1 M | |
| 1.301863727 G | 65.69 | 28.874 | -27.576 | 72.870 | -7.18 | | 150 | 1.09 | 1 M | |

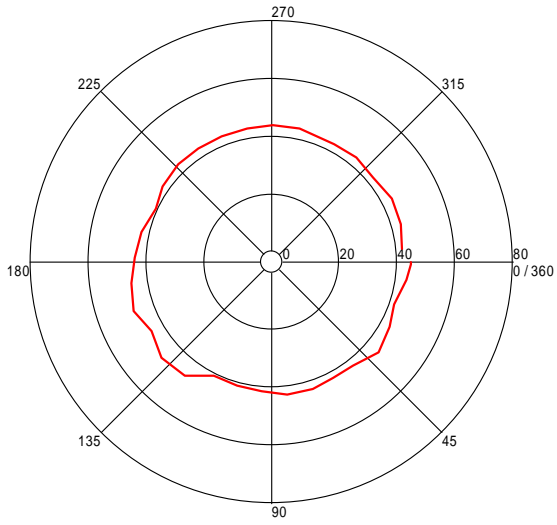
Trace3: Measured Average

| Frequency (Hz) | Level (dBuV/m) | AF | PA+CL | Limit (dBuV/m) | Margin (dBuV/m) | Hor (--), Ver () | Azimuth (deg)(Deg) | Mast Height(m) | RBW(Hz) | Comment |
|----------------|----------------|--------|---------|----------------|-----------------|-----------------------|--------------------|----------------|---------|---------|
| 1.736212425 G | 27.53 | 29.318 | -26.823 | 52.870 | -25.34 | | 30 | 2.76 | 1 M | |
| 3.473132933 G | 29.00 | 32.984 | -24.905 | 52.870 | -23.87 | | 0 | 1.09 | 1 M | |
| 2.606800267 G | 29.81 | 32.588 | -25.681 | 52.870 | -23.06 | | 8 | 1.80 | 1 M | |
| 2.169899799 G | 32.13 | 31.286 | -25.971 | 52.870 | -20.74 | -- | 292 | 1.32 | 1 M | |
| 4.377682031 G | 35.31 | 33.626 | -23.629 | 52.870 | -17.56 | -- | 21 | 2.53 | 1 M | |
| 3.037822311 G | 36.68 | 32.966 | -25.105 | 52.870 | -16.19 | | 287 | 2.04 | 1 M | |
| 3.890567802 G | 40.50 | 33.670 | -23.781 | 52.870 | -12.37 | -- | 360 | 1.09 | 1 M | |
| 1.301863727 G | 45.69 | 28.874 | -27.576 | 52.870 | -7.18 | | 150 | 1.09 | 1 M | |

Azimuth Plots

Turntable Plot (1.301863727 GHz)

Level (dBuV/m)

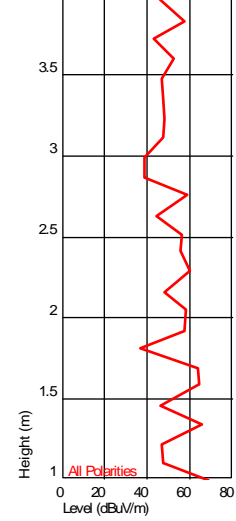


All Polarities

Azimuth (Degrees)

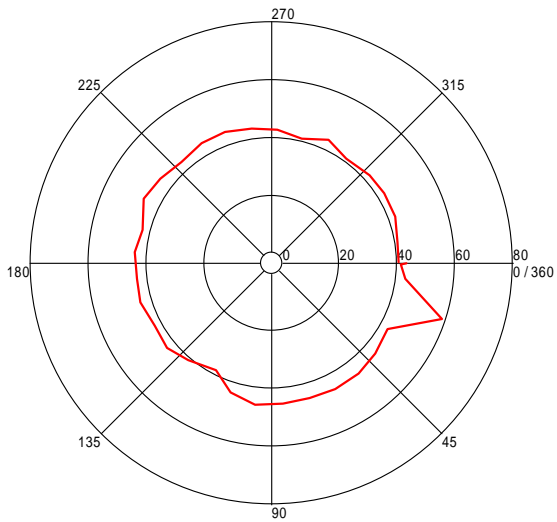
Turntable Plots

Height Plot (1.301863727 GHz)



Turntable Plot (1.736212425 GHz)

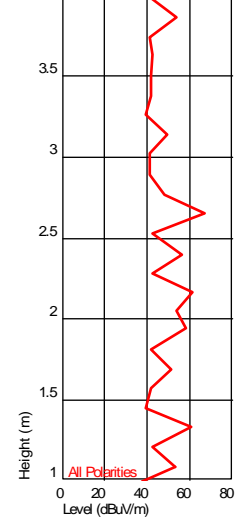
Level (dBuV/m)



All Polarities

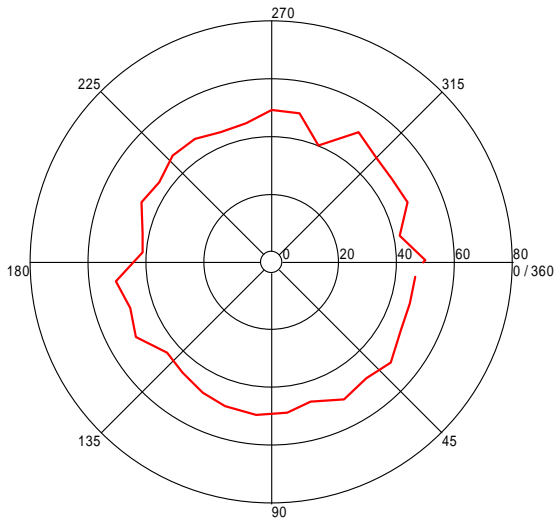
Azimuth (Degrees)

Height Plot (1.736212425 GHz)



Turntable Plot (2.169899799 GHz)

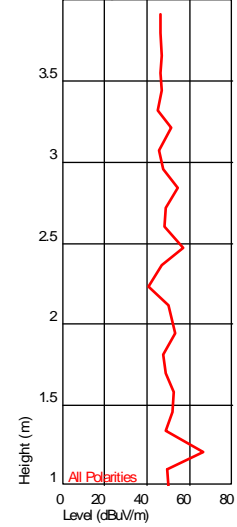
Level (dBuV/m)



All Polarities

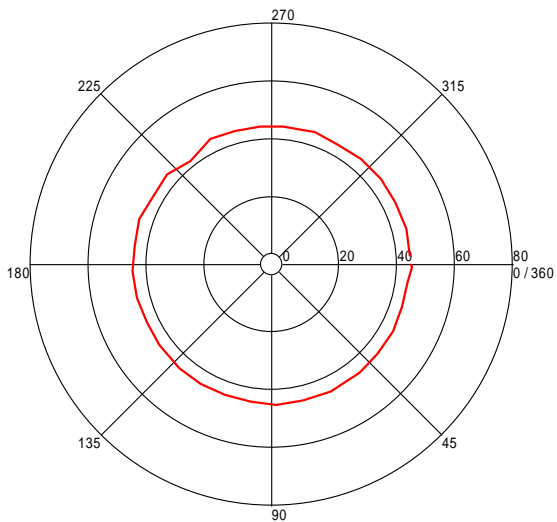
Azimuth (Degrees)

Height Plot (2.169899799 GHz)



Turntable Plot (2.606800267 GHz)

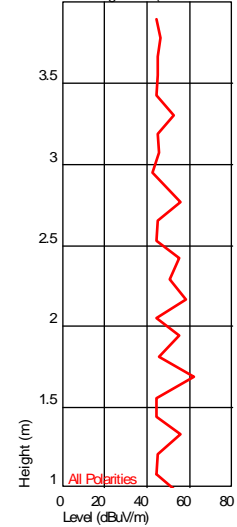
Level (dBuV/m)



All Polarities

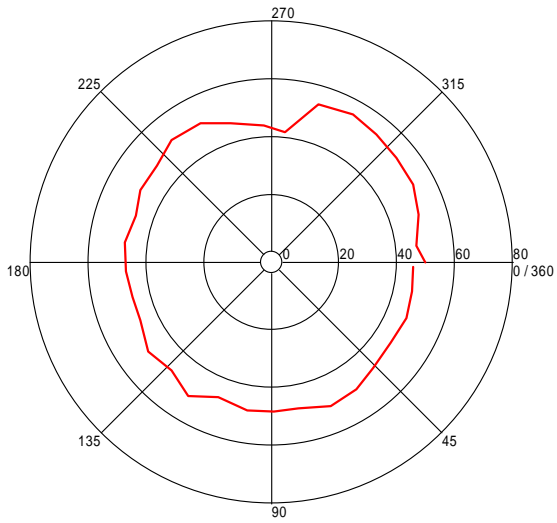
Azimuth (Degrees)

Height Plot (2.606800267 GHz)



Turntable Plot (3.037822311 GHz)

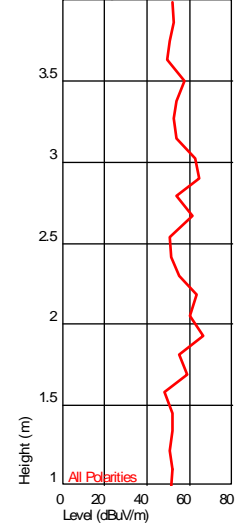
Level (dBuV/m)



All Polarities

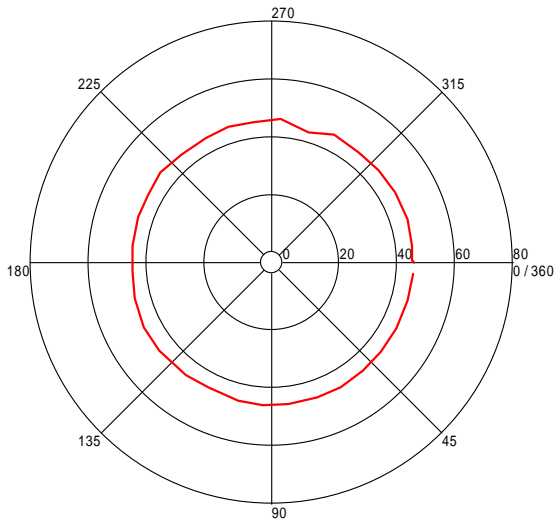
Azimuth (Degrees)

Height Plot (3.037822311 GHz)



Turntable Plot (3.473132933 GHz)

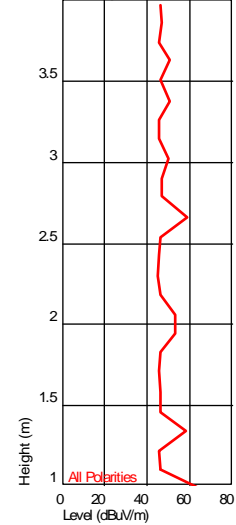
Level (dBuV/m)



All Polarities

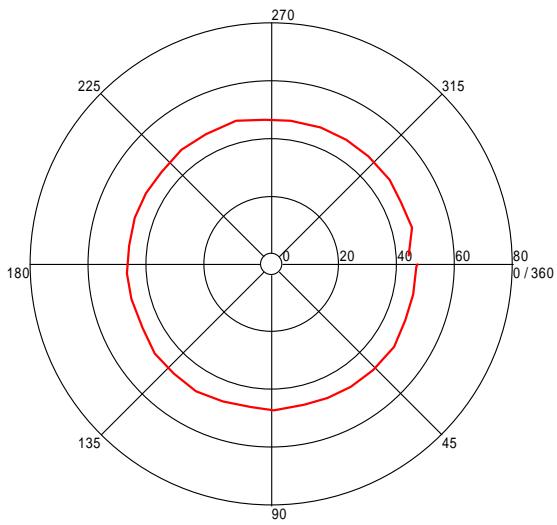
Azimuth (Degrees)

Height Plot (3.473132933 GHz)



Turntable Plot (3.890567802 GHz)

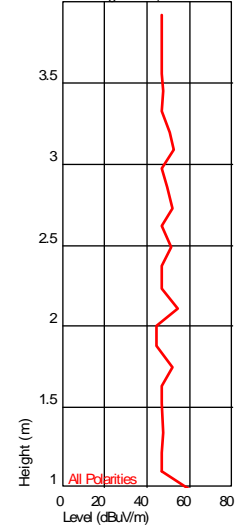
Level (dBuV/m)



All Polarities

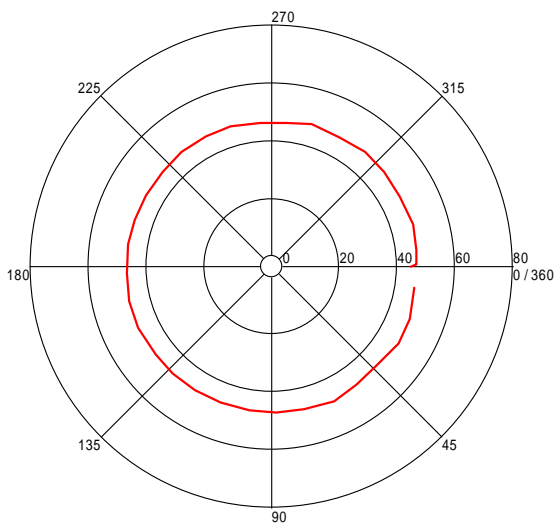
Azimuth (Degrees)

Height Plot (3.890567802 GHz)



Turntable Plot (4.377682031 GHz)

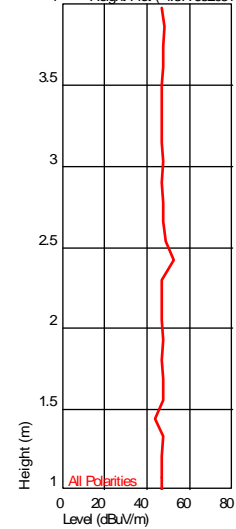
Level (dBuV/m)



All Polarities

Azimuth (Degrees)

Height Plot (4.377682031 GHz)

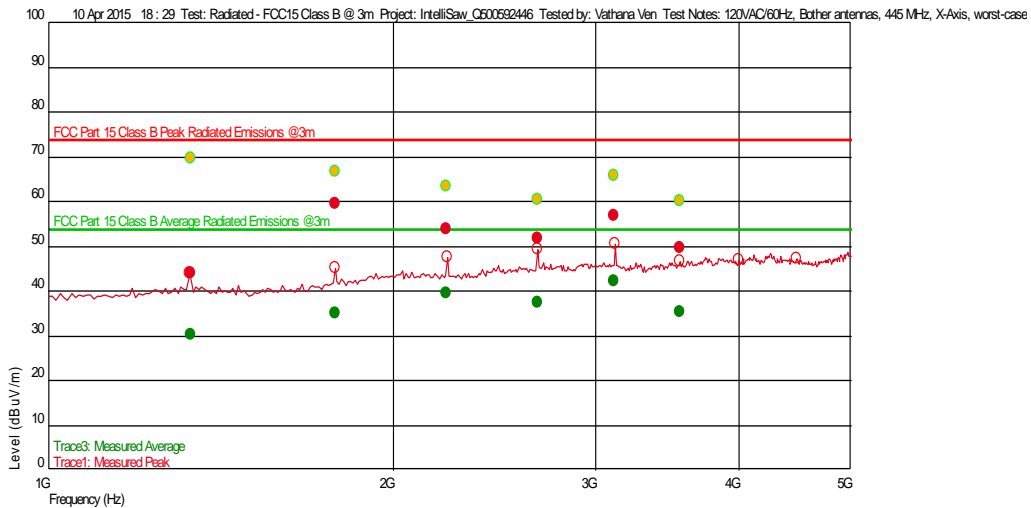


Test Information

Test Details
 Test: Radiated – RSS-210 @ 3m
 Project: IntelliSaw_Q500592446
 Test Notes: 120VAC/60Hz, Both antennas, 445 MHz, X-Axis, worst-case
 Temperature: 21 deg C
 Humidity: 38%, 994 mB
 Tested by: Vathana Ven
 Test Started: 10 Apr 2015 18 : 29

Additional Information

Prescan Emission Graph



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable
- Swept Peak Data
- Swept Quasi Peak Data
- Swept Average Data

Emissions Test Data

Trace1: Measured Peak

| Frequency (Hz) | Level (dBuV/m) | AF | PA+CL | Limit (dBuV/m) | Margin (dBuV/m) | Hor (--), Ver () | Azimuth (deg)(Deg) | Mast Height(m) | RBW(Hz) | Comment |
|----------------|----------------|--------|---------|----------------|-----------------|-------------------|--------------------|----------------|---------|---------|
| 1.332732131 G | 43.97 | 28.823 | -27.486 | 73.220 | -29.25 | -- | 187 | 1.19 | 1 M | |
| 3.550627922 G | 49.67 | 33.042 | -24.420 | 73.220 | -23.55 | | 50 | 1.80 | 1 M | |
| 2.669812959 G | 51.88 | 32.519 | -25.522 | 73.220 | -21.34 | | 317 | 2.29 | 1 M | |
| 2.22490982 G | 53.82 | 31.306 | -26.041 | 73.220 | -19.40 | | 192 | 2.52 | 1 M | |
| 3.114856379 G | 56.86 | 32.979 | -25.220 | 73.220 | -16.36 | | 249 | 3.12 | 1 M | |
| 1.77993988 G | 59.56 | 29.739 | -26.674 | 73.220 | -13.66 | -- | 195 | 1.09 | 1 M | |

Trace3: Measured Average

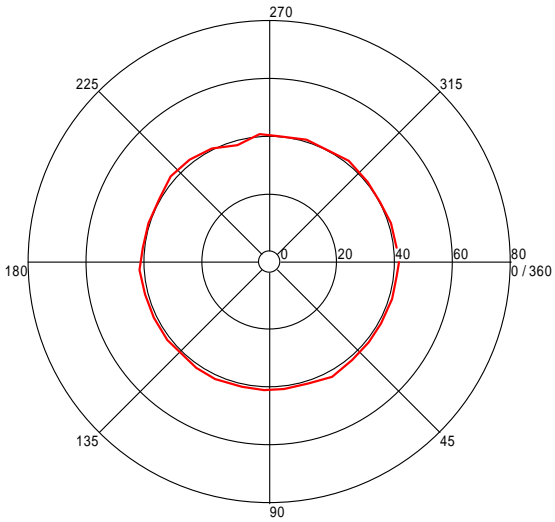
| Frequency (Hz) | Level (dBuV/m) | AF | PA+CL | Limit (dBuV/m) | Margin (dBuV/m) | Hor (--), Ver () | Azimuth (deg)(Deg) | Mast Height(m) | RBW(Hz) | Comment |
|----------------|----------------|--------|---------|----------------|-----------------|-------------------|--------------------|----------------|---------|---------|
| 1.332732131 G | 23.97 | 28.823 | -27.486 | 53.220 | -29.25 | -- | 187 | 1.19 | 1 M | |
| 3.550627922 G | 29.67 | 33.042 | -24.420 | 53.220 | -23.55 | | 50 | 1.80 | 1 M | |
| 2.669812959 G | 31.88 | 32.519 | -25.522 | 53.220 | -21.34 | | 317 | 2.29 | 1 M | |
| 2.22490982 G | 33.82 | 31.306 | -26.041 | 53.220 | -19.40 | | 192 | 2.52 | 1 M | |
| 3.114856379 G | 36.86 | 32.979 | -25.220 | 53.220 | -16.36 | | 249 | 3.12 | 1 M | |
| 1.77993988 G | 39.56 | 29.739 | -26.674 | 53.220 | -13.66 | -- | 195 | 1.09 | 1 M | |

Azimuth Plots

Turntable Plots

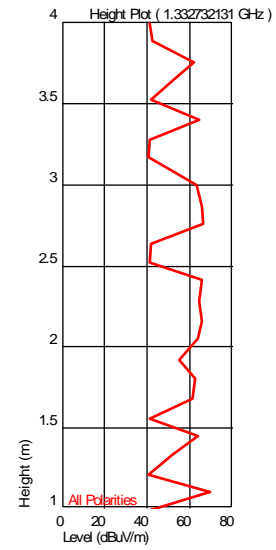
Turntable Plot (1.332732131 GHz)

Level (dBuV/m)



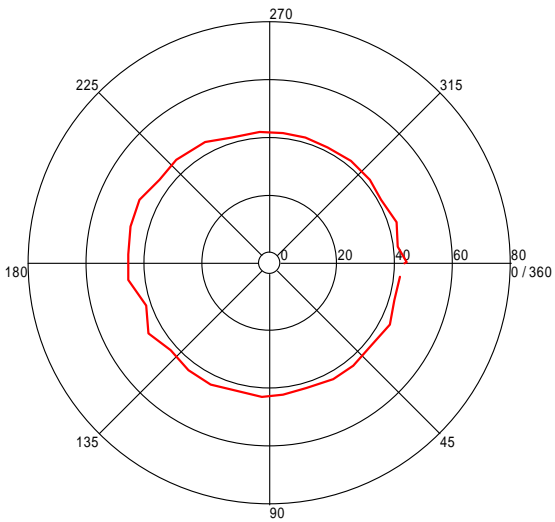
All Polarities

Azimuth (Degrees)



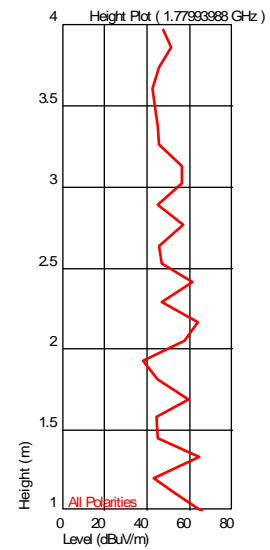
Turntable Plot (1.7793988 GHz)

Level (dBuV/m)



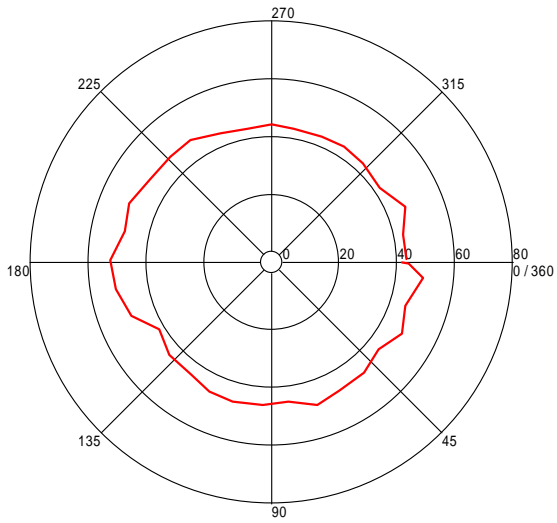
All Polarities

Azimuth (Degrees)



Turntable Plot (2.22490982 GHz)

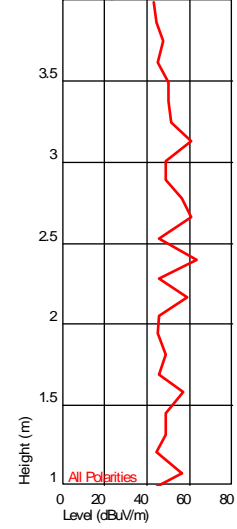
Level (dBuV/m)



All Polarities

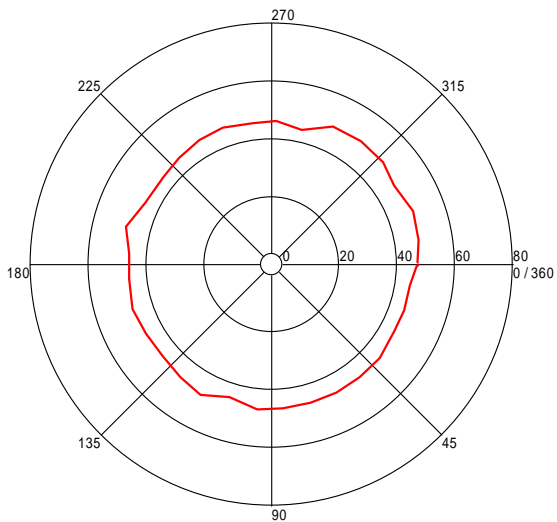
Azimuth (Degrees)

Height Plot (2.22490982 GHz)



Turntable Plot (2.669812959 GHz)

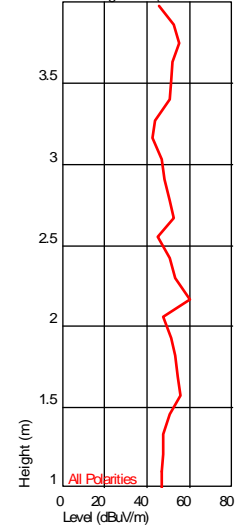
Level (dBuV/m)



All Polarities

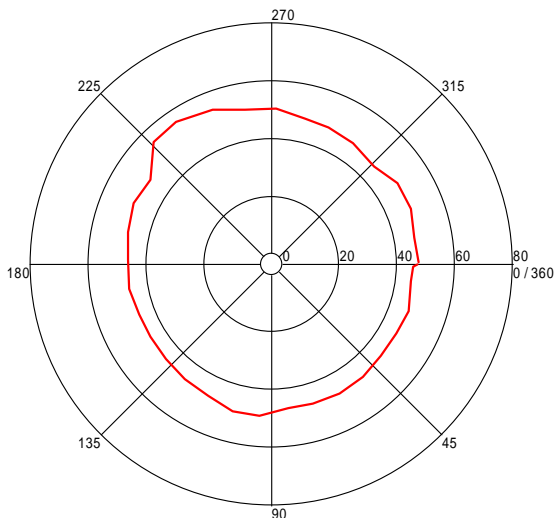
Azimuth (Degrees)

Height Plot (2.669812959 GHz)



Turntable Plot (3.114856379 GHz)

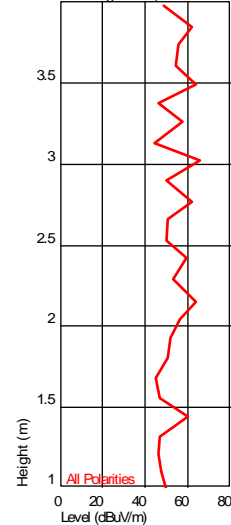
Level (dBuV/m)



All Polarities

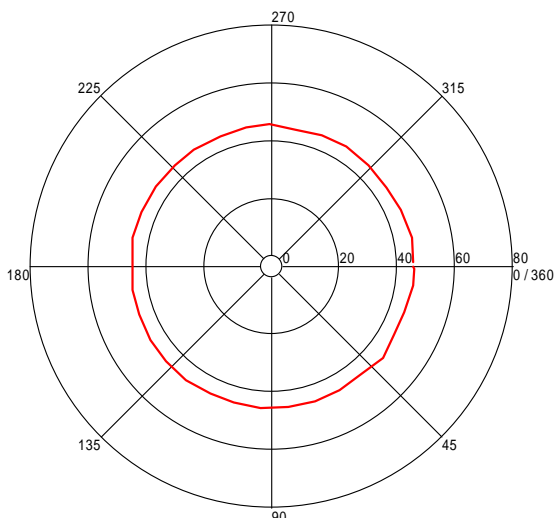
Azimuth (Degrees)

Height Plot (3.114856379 GHz)



Turntable Plot (3.550627922 GHz)

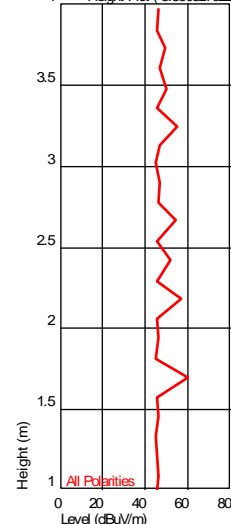
Level (dBuV/m)



All Polarities

Azimuth (Degrees)

Height Plot (3.550627922 GHz)



Test Personnel: Vathana Ven *VSV*
 Supervising/Reviewing Engineer: _____
 (Where Applicable) Engineer: N/A
 Product Standard: RSS-210
 Input Voltage: Powered from 24VDC Host
 Pretest Verification w/ Ambient Signals or BB Source: Ambient Signals

Test Date: 04/09/2015

Limit Applied: RSS-210

Ambient Temperature: See data tables

Relative Humidity: See data tables

Atmospheric Pressure: See data tables

9 Duty Cycle

9.1 Method

Tests are performed in accordance with FCC 47CFR Part 15 Subpart C Section 15.231(c), ANSI C63.10, and RSS-Gen Section 6.10.

TEST SITE: 10m ALSE

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A wooden table 80 cm high is used for table-top equipment.

9.2 Test Equipment Used:

| Asset | Description | Manufacturer | Model | Serial | Cal Date | Cal Due |
|----------|--|-------------------|--------------------|-------------|------------|------------|
| 145128' | EMI Receiver (20 Hz - 40 Ghz) | Rohde & Schwarz | ESIB 40 | 839283/001 | 03/17/2014 | 03/17/2015 |
| 145-410' | Cables 145-400 145-403 145-405 145-406 145-407 | Huber + Suhner | 10m Track A Cables | multiple | 10/04/2014 | 10/04/2015 |
| 145106' | Bilog Antenna (30MHz - 5GHz) | Sunol Sciences | JB5 | A111003 | 10/24/2014 | 10/24/2015 |
| Dav004' | Weather Station | Davis Instruments | 7400 | PE80529A61A | 10/06/2014 | 10/06/2015 |

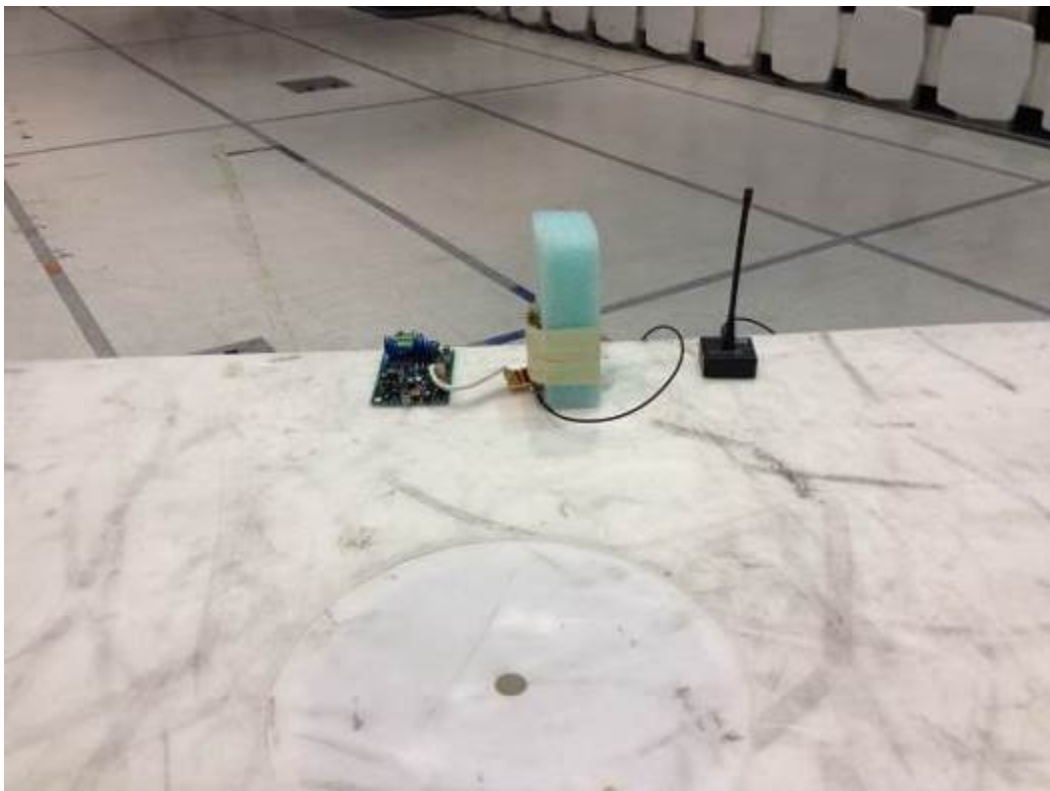
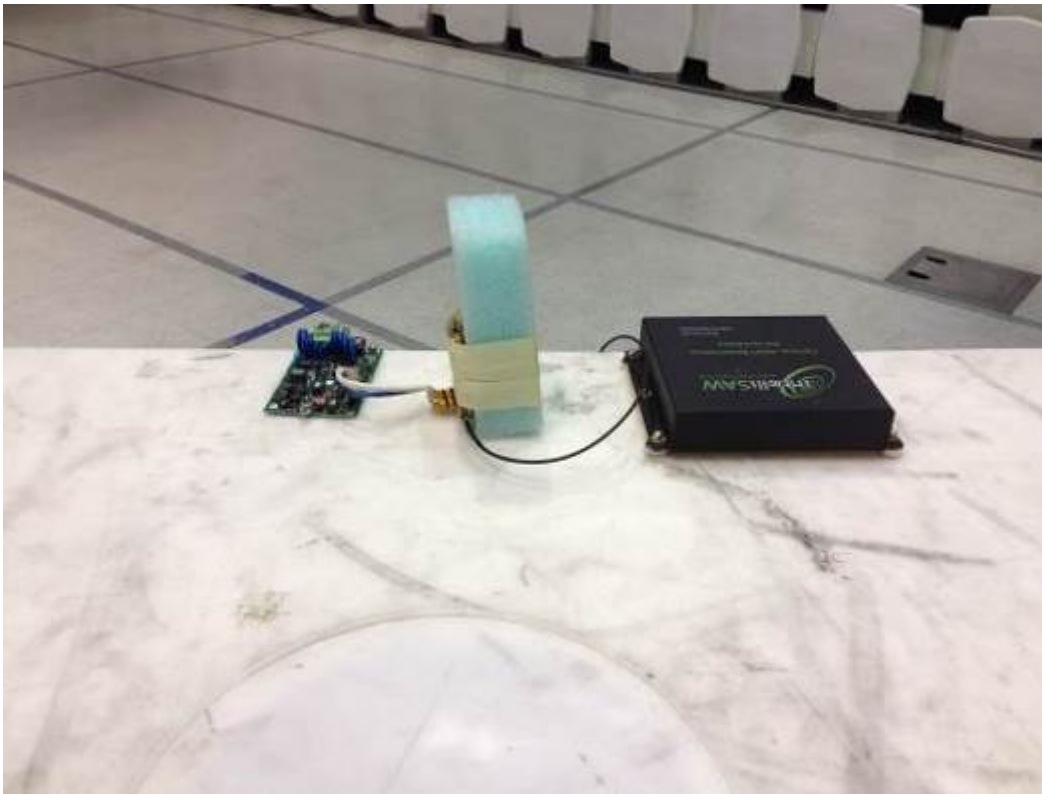
Software Utilized:

| Name | Manufacturer | Version |
|------|--------------|---------|
| None | | |

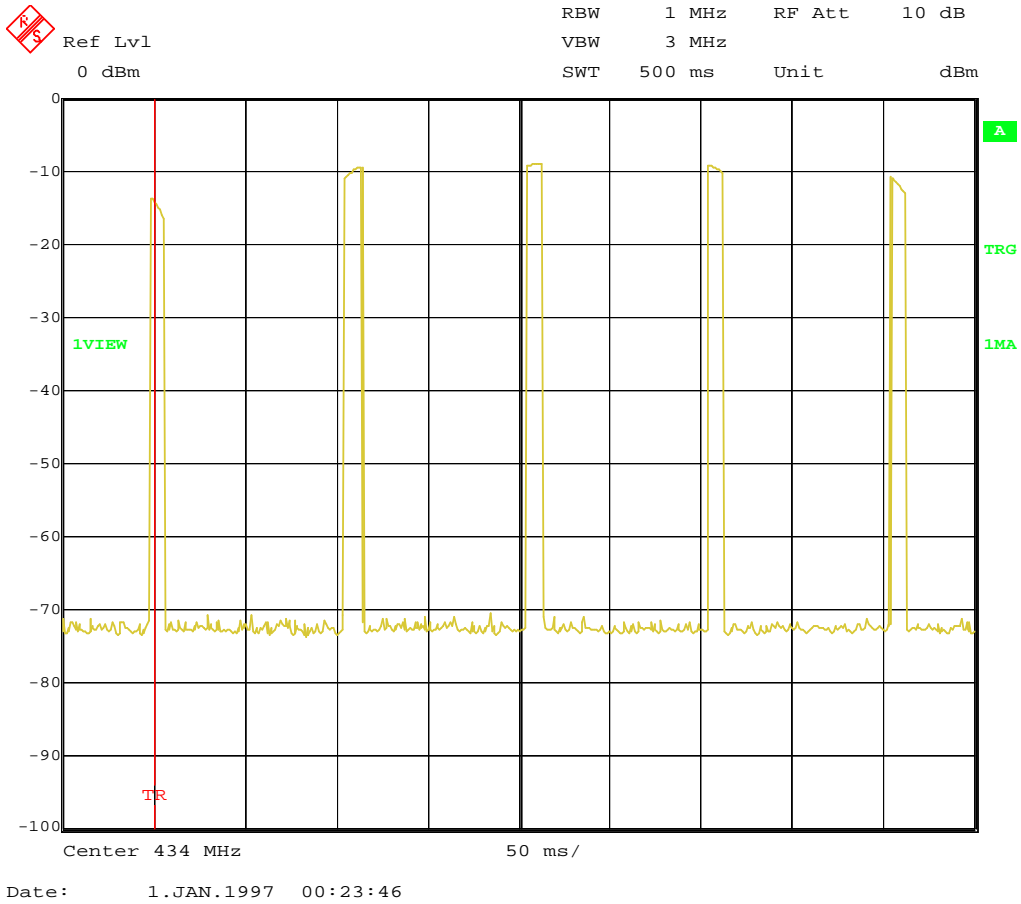
9.3 Results:

There is no limit on duty cycle, it is used to obtain the average value of emissions. The duty cycle average factor was determined to be 20 dB.

9.4 Setup Photographs:

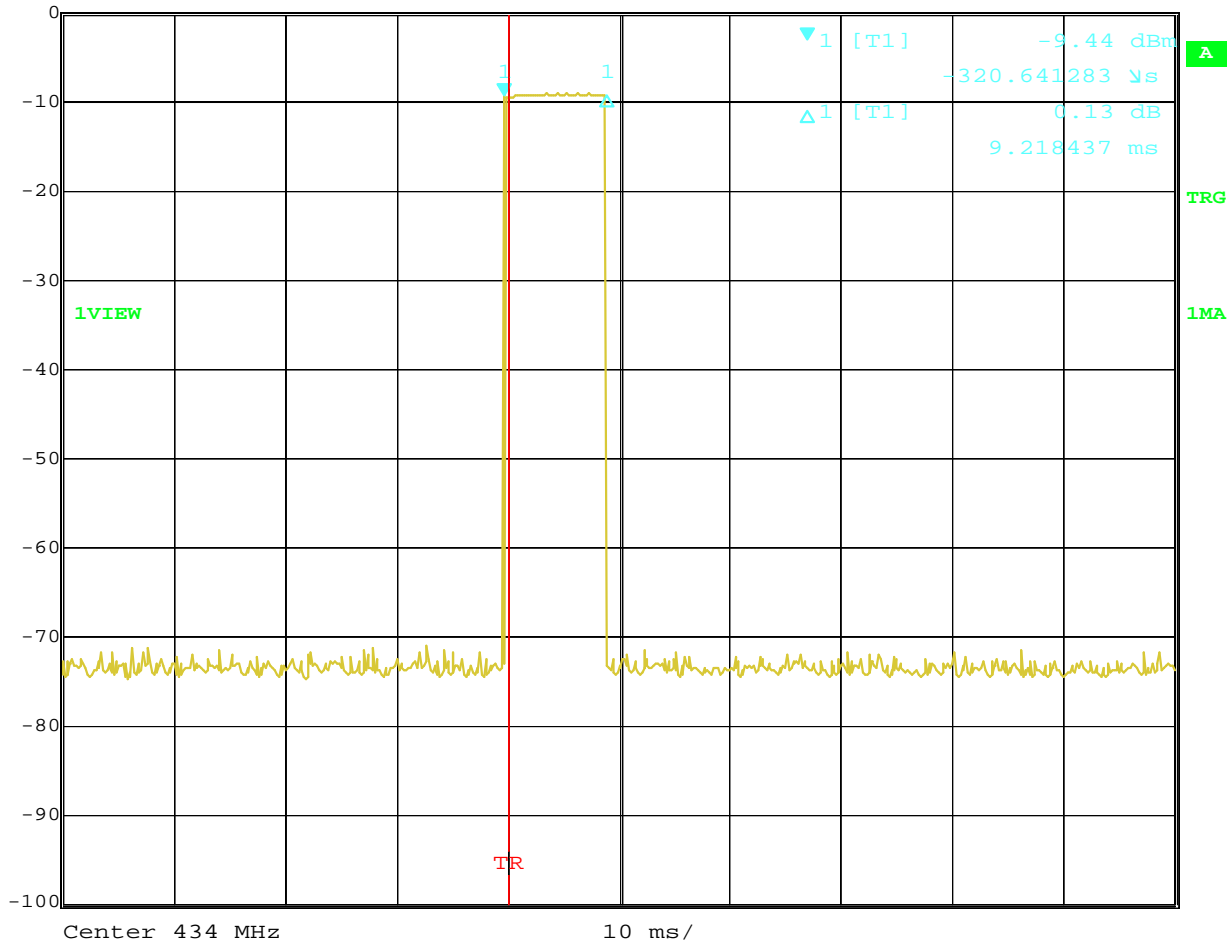


9.5 Plots/Data:





Marker 1 [T1] RBW 1 MHz RF Att 10 dB
Ref Lvl -9.44 dBm VBW 3 MHz
0 dBm -320.641283 μ s SWT 100 ms Unit dBm



Date: 1.JAN.1997 00:25:51

Test Personnel: Vathana Ven *VSV*
Supervising/Reviewing
Engineer: _____
(Where Applicable) N/A
Product Standard: FCC Part 15 Subpart C,
Input Voltage: RSS-Gen
Powered from 24VDC Host
Pretest Verification w/
Ambient Signals or
BB Source: Ambient Signals

Test Date: 02/26/2015

Limit Applied: N/A

Ambient Temperature: 22 °C
10 %
Relative Humidity: _____
1007 mbars
Atmospheric Pressure: _____

10 Automatically Limiting Operation

10.1 Method

Tests are performed in accordance with FCC 47CFR Part 15 Subpart C Section 15.231(e), ANSI C63.10, and RSS-210.

TEST SITE: 10m ALSE

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A wooden table 80 cm high is used for table-top equipment.

10.2 Test Equipment Used:

| Asset | Description | Manufacturer | Model | Serial | Cal Date | Cal Due |
|------------|---------------------------------|-----------------------|----------|-------------|------------|------------|
| ROS001' | Spectrum Analyzer 20Hz - 40 GHz | Rohde & Schwartz | FSEK-30 | 100225 | 05/19/2014 | 05/19/2015 |
| CBLSHF203' | Cable, SMA - SMA, < 18GHz | Sucoflex (Huber Suhm) | 104PE | CBLSHF203 | 06/03/2004 | 06/03/2015 |
| WEI8' | Attenuator | Weinschel Corp | 47-10-34 | BD8309 | 03/26/2014 | 03/26/2015 |
| Dav004' | Weather Station | Davis Instruments | 7400 | PE80529A61A | 10/06/2014 | 10/06/2015 |

Software Utilized:

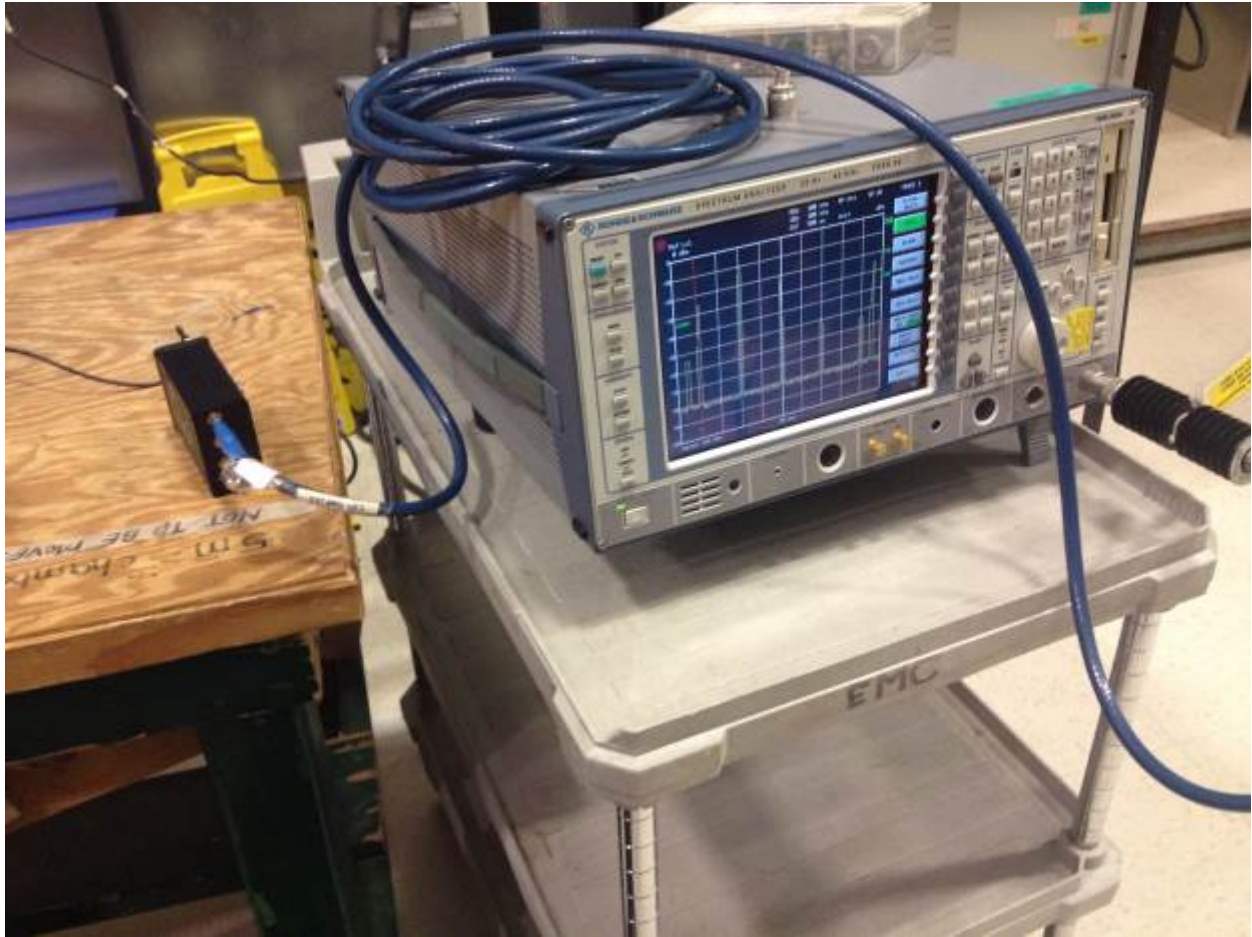
| Name | Manufacturer | Version |
|------|--------------|---------|
| None | | |

10.3 Results:

The sample tested was found to Comply.

In addition, devices operated under the provisions of this paragraph shall be provided with a means for automatically limiting operation so that the duration of each transmission shall not be greater than one second and the silent period between transmissions shall be at least 30 times the duration of the transmission but in no case less than 10 seconds.

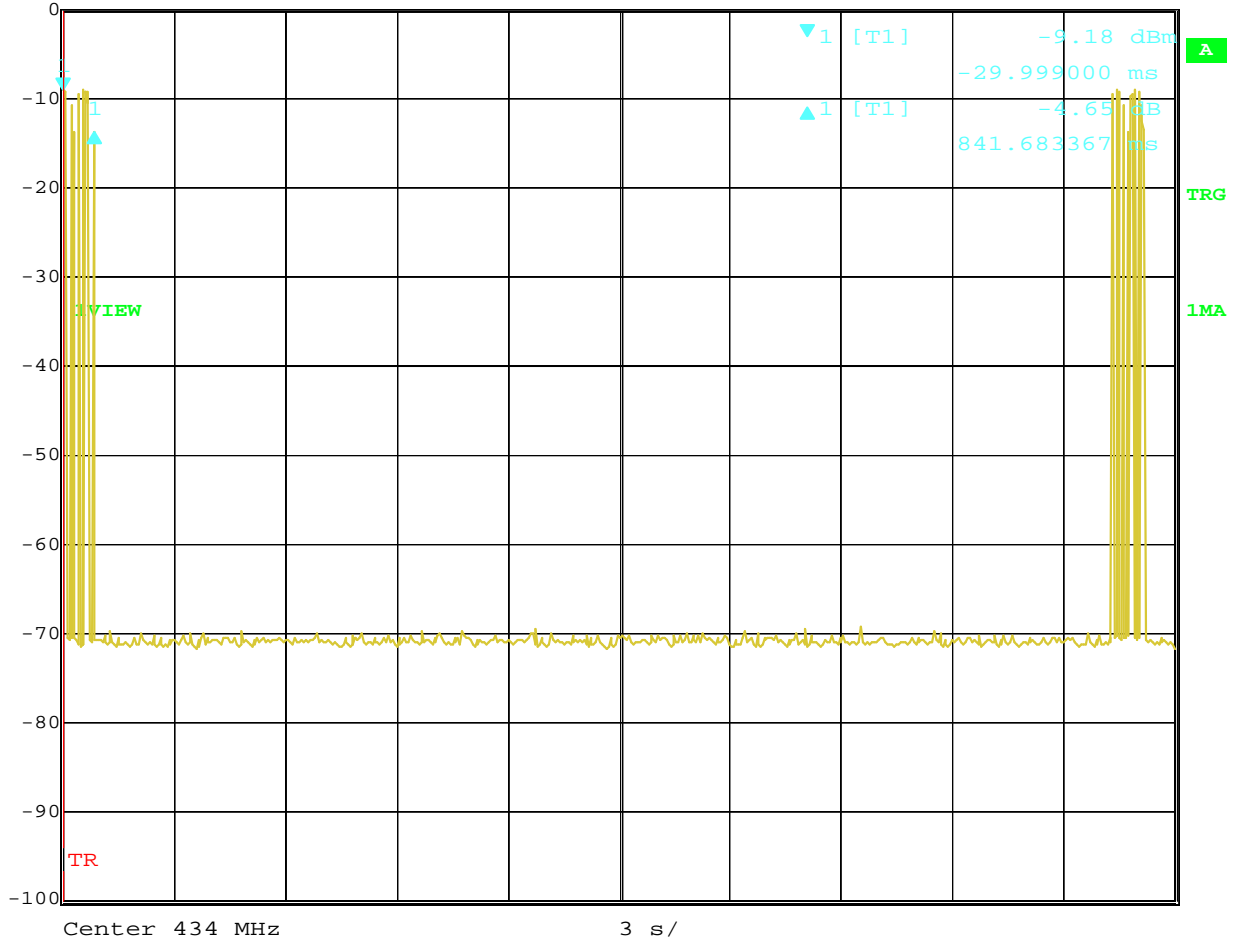
10.4 Setup Photographs:



10.5 Plots/Data:



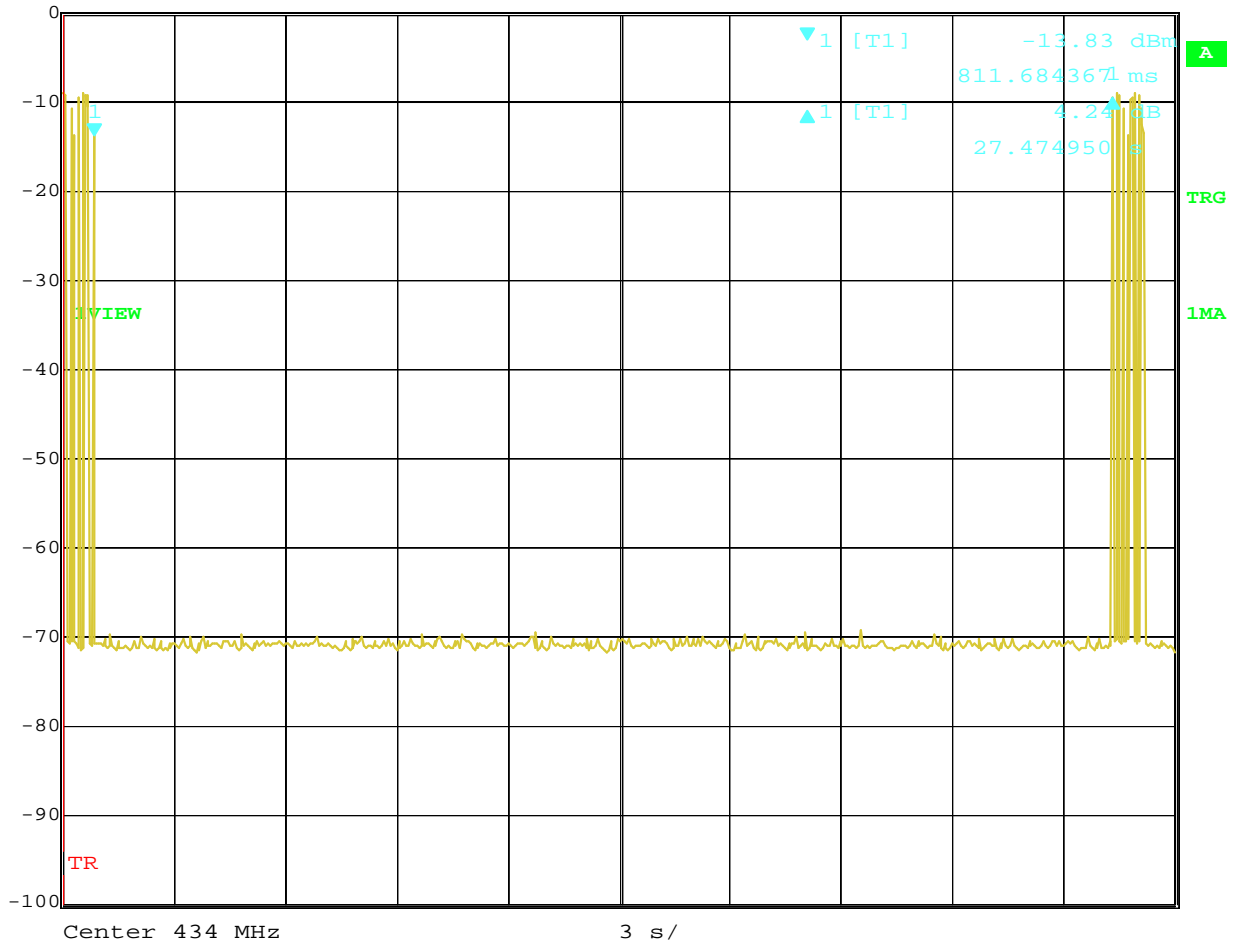
Delta 1 [T1] RBW 1 MHz RF Att 10 dB
Ref Lvl -4.65 dB VBW 3 MHz
0 dBm 841.683367 ms SWT 30 s Unit dBm



Date: 1.JAN.1997 00:52:11



| | | | | | |
|---------|--------------|-----|-------|--------|-------|
| | Delta 1 [T1] | RBW | 1 MHz | RF Att | 10 dB |
| Ref Lvl | 4.24 dB | VBW | 3 MHz | | |
| 0 dBm | 27.474950 s | SWT | 30 s | Unit | dBm |



Date: 1.JAN.1997 00:53:23

Test Personnel: Vathana Ven *VSV*
 Supervising/Reviewing Engineer: _____
 (Where Applicable) N/A
 Product Standard: FCC Part 15 Subpart C, RSS-210
 Input Voltage: Powered from 24VDC Host
 Pretest Verification w/ Ambient Signals or BB Source: Ambient Signals

Test Date: 02/26/2015
 Limit Applied: Section 15.231(e), RSS-210
 Ambient Temperature: 22 °C
 Relative Humidity: 10 %
 Atmospheric Pressure: 1007 mbars

11 AC Mains Conducted Emissions

11.1 Method

Tests are performed in accordance with FCC 47CFR Part 15 Subpart B, ANSI C63.4, and ICES-003.

TEST SITE: 10m ALSE

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. A Styrofoam table 80 cm high is used for table-top equipment.

Measurement Uncertainty

| Measurement | Frequency Range | Expanded Uncertainty (k=2) | Ucispr |
|-----------------------------|------------------|----------------------------|--------|
| AC Line Conducted Emissions | 150 kHz - 30 MHz | 2.8 | 3.4 |
| Telco Port Emissions | 150 kHz - 30 MHz | 3.2 | 5 |

Sample Calculations

The following is how net line-conducted readings were determined:

$$NF = RF + LF + CF + AF$$

Where NF = Net Reading in dB μ V

RF = Reading from receiver in dB μ V

LF = LISN or ISN Correction Factor in dB

CF = Cable Correction Factor in dB

AF = Attenuator Loss Factor in dB

To convert from dB μ V to μ V or mV the following was used:

$$UF = 10^{(NF / 20)} \text{ where } UF = \text{Net Reading in } \mu\text{V}$$

NF = Net Reading in dB μ V

Example:

$$NF = RF + LF + CF + AF = 28.5 + 0.2 + 0.4 + 20.0 = 49.1 \text{ dB}\mu\text{V}$$

$$UF = 10^{(49.1 \text{ dB}\mu\text{V} / 20)} = 285.1 \mu\text{V/m}$$

Alternately, when C5 Software is used, the "Level" includes all losses and gains and is compared directly in the "Margin" column to the "Limit". "TF" is the Transducer Factor; in this case LISN or ISN loss.

11.2 Test Equipment Used:

| Asset | Description | Manufacturer | Model | Serial | Cal Date | Cal Due |
|-----------|-------------------------------------|-------------------|--------------|-------------|------------|------------|
| DAV004' | Weather Station | Davis Instruments | 7400 | PE80529A61A | 10/06/2014 | 10/06/2015 |
| 145128' | EMI Receiver (20 Hz - 40 Ghz) | Rohde & Schwarz | ESIB 40 | 839283/001 | 03/14/2015 | 03/14/2016 |
| LISN32' | LISN - CISPR16 Compliant 9kHz-30MHz | Com-Power | LI-215A | 191955 | 03/18/2015 | 03/18/2016 |
| DS27' | Attenuator, 20dB | Mini Circuits | 20dB, 50 ohm | DS27 | 10/01/2014 | 10/01/2015 |
| CBLBNC10' | 25 ft, 50 Ohm BNC Cable | Pomona | RG 58 C/U | CBLBNC10 | 10/04/2014 | 10/04/2015 |

Software Utilized:

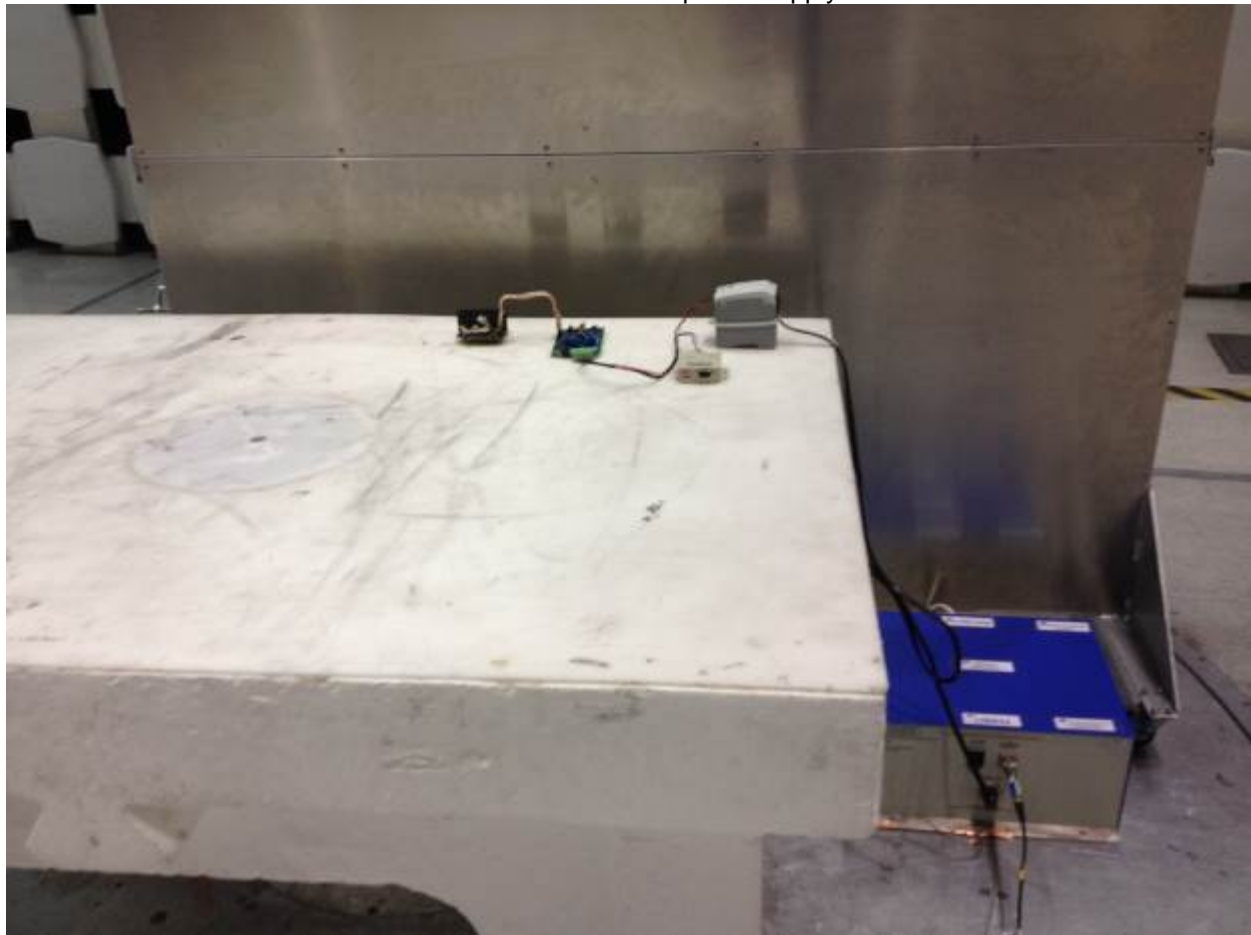
| Name | Manufacturer | Version |
|------|--------------|------------------|
| C5 | TESEQ | Build 5.26.46.46 |

11.3 Results:

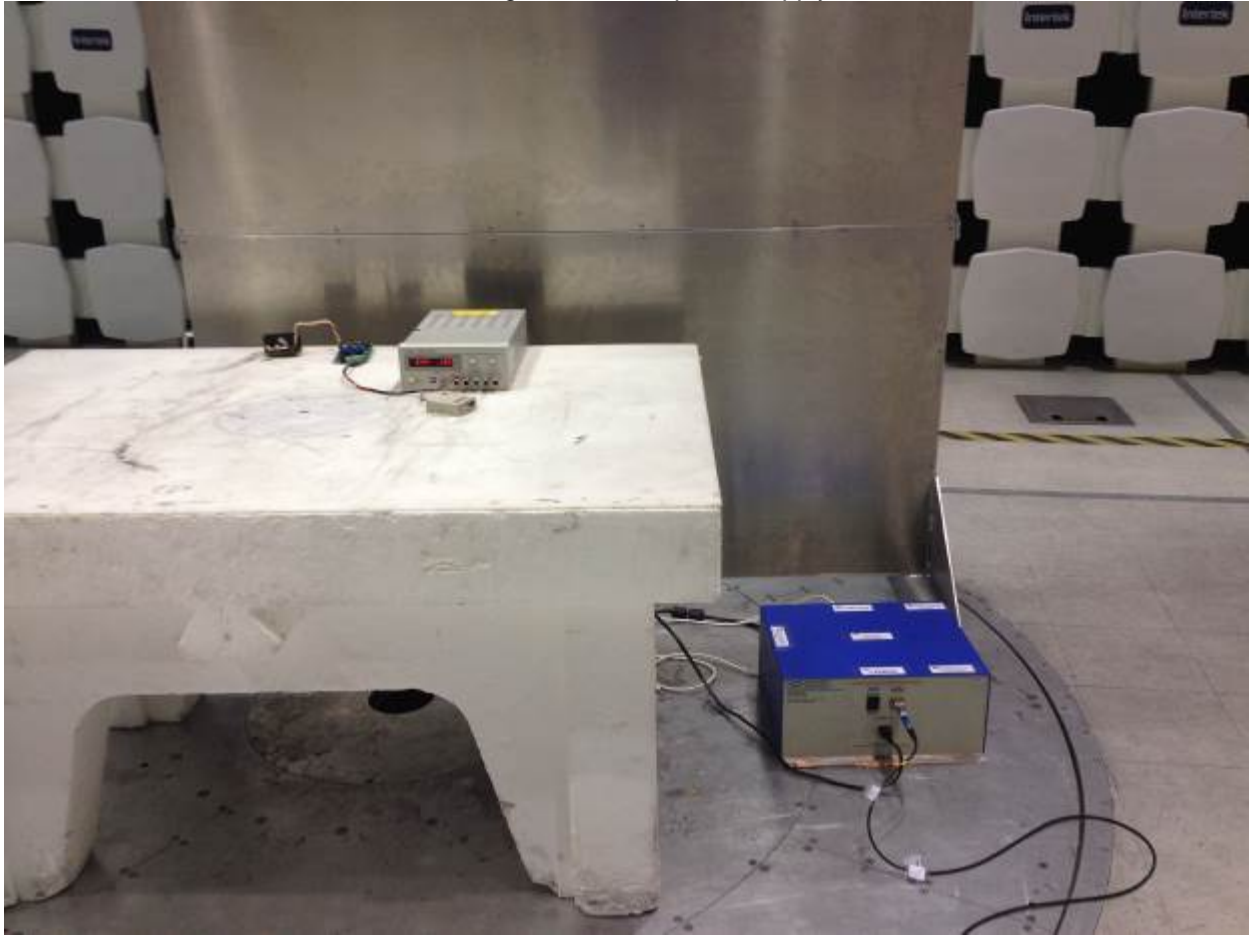
The sample tested was found to Comply.

11.4 Setup Photographs:

With Phoenix Contact power supply



With Agilent variable power supply

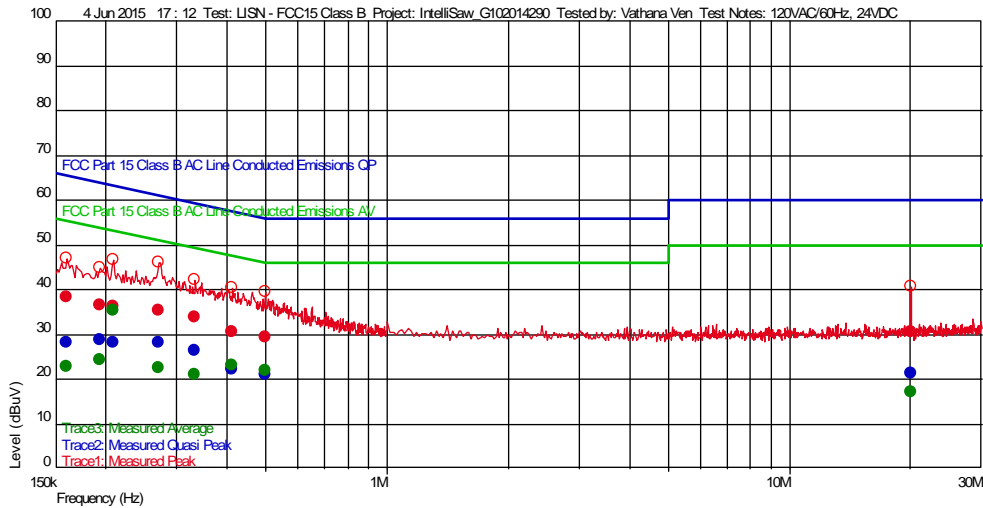


11.5 Plots/Data:

Test Information

| | | |
|---------------|-------------------------|------------------------|
| Test Details | User Entry | Additional Information |
| Test: | LISN – ICES-003 Class B | |
| Project: | IntelliSaw_G102014290 | |
| Test Notes: | 120VAC/60Hz, 24VDC | |
| Temperature: | 22 deg C | |
| Humidity: | 37%, 1013 mB | |
| Tested by: | Vathana Ven | |
| Test Started: | 4 Jun 2015 17 : 12 | |

Prescan Emission Graph



Emissions Test Data

Trace2: Measured Quasi Peak

| Frequency(Hz) | Level(dBuV) | TF | PA+CL | Limit(dBuV) | Margin(dBuV) | RBW(Hz) | Comment | LINE |
|-----------------|-------------|-------|--------|-------------|--------------|---------|---------|------|
| 20.02004008 M | 21.29 | 0.110 | 21.174 | 60.000 | -38.71 | 9 k | | L1 |
| 160.220440882 k | 28.22 | 0.070 | 20.460 | 65.453 | -37.23 | 9 k | | L1 |
| 414.028056112 k | 22.29 | 0.030 | 20.589 | 57.567 | -35.28 | 9 k | | L1 |
| 194.288577154 k | 28.80 | 0.056 | 20.508 | 63.851 | -35.05 | 9 k | | L1 |
| 497.49498998 k | 21.07 | 0.030 | 20.589 | 56.042 | -34.97 | 9 k | | L1 |
| 209.619238477 k | 28.26 | 0.048 | 20.521 | 63.220 | -34.96 | 9 k | | L1 |
| 270.941883768 k | 28.11 | 0.040 | 20.570 | 61.089 | -32.98 | 9 k | | L1 |
| 333.967935872 k | 26.40 | 0.033 | 20.570 | 59.352 | -32.95 | 9 k | | L1 |

Trace3: Measured Average

| Frequency(Hz) | Level(dBuV) | TF | PA+CL | Limit(dBuV) | Margin(dBuV) | RBW(Hz) | Comment | LINE |
|-----------------|-------------|-------|--------|-------------|--------------|---------|---------|------|
| 20.02004008 M | 17.30 | 0.110 | 21.174 | 50.000 | -32.70 | 9 k | | L1 |
| 160.220440882 k | 22.92 | 0.070 | 20.460 | 55.453 | -32.53 | 9 k | | L1 |
| 194.288577154 k | 24.25 | 0.056 | 20.508 | 53.851 | -29.60 | 9 k | | L1 |
| 270.941883768 k | 22.65 | 0.040 | 20.570 | 51.089 | -28.44 | 9 k | | L1 |
| 333.967935872 k | 21.06 | 0.033 | 20.570 | 49.352 | -28.29 | 9 k | | L1 |
| 414.028056112 k | 23.01 | 0.030 | 20.589 | 47.567 | -24.55 | 9 k | | L1 |
| 497.49498998 k | 21.90 | 0.030 | 20.589 | 46.042 | -24.14 | 9 k | | L1 |
| 209.619238477 k | 35.34 | 0.048 | 20.521 | 53.220 | -17.88 | 9 k | | L1 |

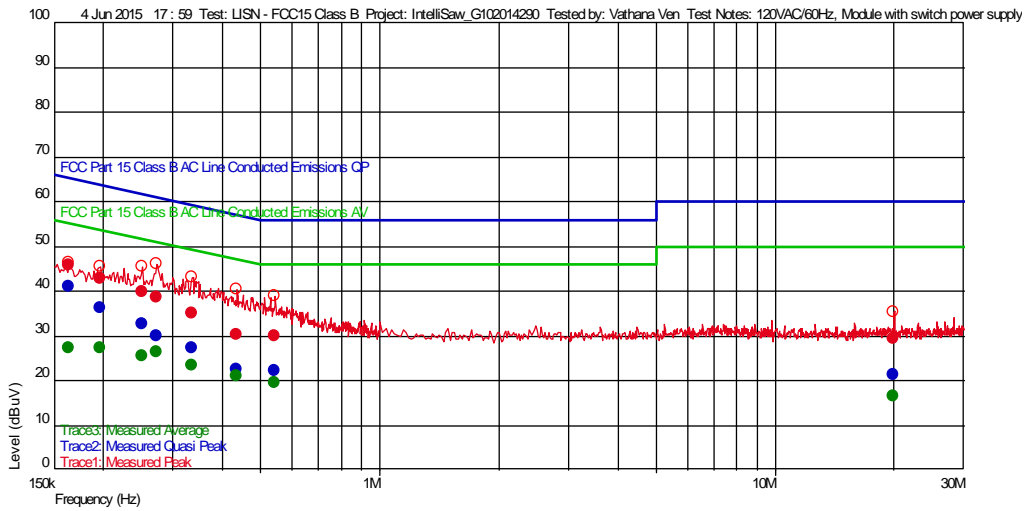
Test Information

Test Details

User Entry
 LISN - ICES-003 Class B
 IntelliSaw_G102014290
 120VAC/60Hz, Module with switch power supply
 22 deg C
 37%, 1013 mB
 Vathana Ven
 4 Jun 2015 17 : 59

Additional Information

Prescan Emission Graph



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable
- Swept Peak Data
- Swept Quasi Peak Data
- Swept Average Data

Emissions Test Data

Trace2: Measured Quasi Peak

| Frequency(Hz) | Level(dBuV) | TF | PA+CL | Limit(dBuV) | Margin(dBuV) | RBW(Hz) | Comment | LINE |
|-----------------|-------------|-------|--------|-------------|--------------|---------|---------|------|
| 19.9795992 M | 21.28 | 0.110 | 21.156 | 60.000 | -38.72 | 9 k | | L1 |
| 436.172344689 k | 22.65 | 0.030 | 20.579 | 57.134 | -34.49 | 9 k | | N |
| 543.486973948 k | 22.30 | 0.030 | 20.598 | 56.000 | -33.70 | 9 k | | N |
| 335.671342685 k | 27.30 | 0.033 | 20.573 | 59.310 | -32.01 | 9 k | | N |
| 272.645290581 k | 29.85 | 0.040 | 20.570 | 61.037 | -31.19 | 9 k | | N |
| 250.501002004 k | 32.76 | 0.040 | 20.557 | 61.741 | -28.98 | 9 k | | N |
| 195.991983968 k | 36.20 | 0.054 | 20.498 | 63.779 | -27.58 | 9 k | | N |
| 163.627254509 k | 41.11 | 0.066 | 20.460 | 65.278 | -24.17 | 9 k | | N |

Trace3: Measured Average

| Frequency(Hz) | Level(dBuV) | TF | PA+CL | Limit(dBuV) | Margin(dBuV) | RBW(Hz) | Comment | LINE |
|-----------------|-------------|-------|--------|-------------|--------------|---------|---------|------|
| 19.9795992 M | 16.53 | 0.110 | 21.156 | 50.000 | -33.47 | 9 k | | L1 |
| 163.627254509 k | 27.22 | 0.066 | 20.460 | 55.278 | -28.06 | 9 k | | N |
| 195.991983968 k | 27.24 | 0.054 | 20.498 | 53.779 | -26.54 | 9 k | | N |
| 250.501002004 k | 25.40 | 0.040 | 20.557 | 51.741 | -26.34 | 9 k | | N |
| 543.486973948 k | 19.67 | 0.030 | 20.598 | 46.000 | -26.33 | 9 k | | N |
| 436.172344689 k | 21.06 | 0.030 | 20.579 | 47.134 | -26.07 | 9 k | | N |
| 335.671342685 k | 23.34 | 0.033 | 20.573 | 49.310 | -25.97 | 9 k | | N |
| 272.645290581 k | 26.41 | 0.040 | 20.570 | 51.037 | -24.63 | 9 k | | N |

Test Personnel: Vathana Ven *VSV*
Supervising/Reviewing
Engineer:
(Where Applicable) N/A
Product Standard: ICES003
Input Voltage: 24VDC from 120VAC/60Hz
Pretest Verification w/
Ambient Signals or
BB Source: Yes

Test Date: 06/04/2015
Limit Applied: Class B
Ambient Temperature: 22 °C
Relative Humidity: 37 %
Atmospheric Pressure: 1013 mbars

Deviations, Additions, or Exclusions: None

12 Receiver Radiated Spurious Emissions

12.1 Method

Tests are performed in accordance with FCC 47CFR Part 15 Subpart B, ANSI C63.10, and ICES-003.

TEST SITE: 10m ALSE

The 10m ALSE is 13m (Length) x 21m (Depth) x 10m (Height) with the effective size in terms of space from the tips of the absorber is 12m (Length) x 20m (Depth) x 8.5m (Height). This chamber achieves broadband performance using a unique arrangement of hybrid and ferrite tile absorber. This chamber has a built in 3m diameter turntable (Embedded type). The metal structure of the table makes electrical connection around the entire circumference of the turntable to the ground plane with a metal brush type connection. The turntable is located on one end of the chamber and the antennas are mounted 3 and 10 meters away at the other end of the chamber on the adjustable an Antenna Mast. The antenna mast is a non-conductive bore sighted type with remote control of antenna height and polarization. The Antenna Mast and the turntable can be remotely controlled through the controller located in the adjacent Control room. A wooden table 80 cm high is used for table-top equipment.

Measurement Uncertainty

For radiated emissions, U_{lab} (3.5 dB at 3m and 3.5 dB at 10m below 1 GHz, and 4.2 dB at 3m above 1 GHz) < U_{CISPR} (5.2 dB), which is the reference value in CISPR 16-4-2 Table 1, hence the compliance of the product is only based on the measured value, and no measurement uncertainty correction is required, based on CISPR 22 and CISPR 11 (for 2006 and later revisions) Clause 11.

Sample Calculation

The field strength is calculated by adding the Antenna Factor and Cable Factor, and subtracting the Amplifier Gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where

- FS = Field Strength in dB μ V/m
- RA = Receiver Amplitude (including preamplifier) in dB μ V
- CF = Cable Attenuation Factor in dB
- AF = Antenna Factor in dB
- AG = Amplifier Gain in dB

In the following table(s), the reading shown on the data table reflects the preamplifier gain. An example for the calculations in the following table is as follows.

Assume a receiver reading of 52.0 dB μ V is obtained. The antenna factor of 7.4 dB and cable factor of 1.6 dB is added. The amplifier gain of 29 dB is subtracted, giving a field strength of 32 dB μ V/m. This value in dB μ V/m was converted to its corresponding level in μ V/m.

RA = 52.0 dB μ V
 AF = 7.4 dB/m
 CF = 1.6 dB
 AG = 29.0 dB
 FS = 32 dB μ V/m

To convert from dB μ V to μ V or mV the following was used:

$$UF = 10^{(NF / 20)} \text{ where } UF = \text{Net Reading in } \mu\text{V}$$

$$NF = \text{Net Reading in dB}\mu\text{V}$$

Example:

$$FS = RA + AF + CF - AG = 52.0 + 7.4 + 1.6 - 29.0 = 32.0$$

$$UF = 10^{(32 \text{ dB}\mu\text{V} / 20)} = 39.8 \mu\text{V/m}$$

12.2 Test Equipment Used:

| Asset | Description | Manufacturer | Model | Serial | Cal Date | Cal Due |
|----------|--|-------------------|--------------------|-------------|------------|------------|
| 145128' | EMI Receiver (20 Hz - 40 Ghz) | Rohde & Schwarz | ESIB 40 | 839283/001 | 03/17/2014 | 03/17/2015 |
| 145-410' | Cables 145-400 145-403 145-405 145-406 145-407 | Huber + Suhner | 10m Track A Cables | multiple | 10/04/2014 | 10/04/2015 |
| 145106' | Bilog Antenna (30MHz - 5GHz) | Sunol Sciences | JB5 | A111003 | 10/24/2014 | 10/24/2015 |
| Dav004' | Weather Station | Davis Instruments | 7400 | PE80529A61A | 10/06/2014 | 10/06/2015 |
| REA003' | 1GHz High Pass Filter | Reactel, Inc | 7HS-1G/10G-S11 | 06-1 | 12/30/2013 | 12/30/2015 |
| 145-416' | Cables 145-400 145-402 145-404 145-408 | Huber + Suhner | 3m Track B cables | multiple | 10/04/2014 | 10/04/2015 |
| 145014' | Preamplifier (1 GHz to 26.5 GHz) | Hewlett Packard | 8449B | 3008A00232 | 05/05/2014 | 05/05/2015 |
| ETS002' | 1-18GHz DRG Horn Antenna | ETS Lindgren | 3117 | 00143260 | 03/20/2014 | 03/20/2015 |

Software Utilized:

| Name | Manufacturer | Version |
|----------------|--------------|------------------|
| EMI Boxborough | Intertek | 8/27/2010 |
| C5 | TESEQ | Build 5.26.46.46 |

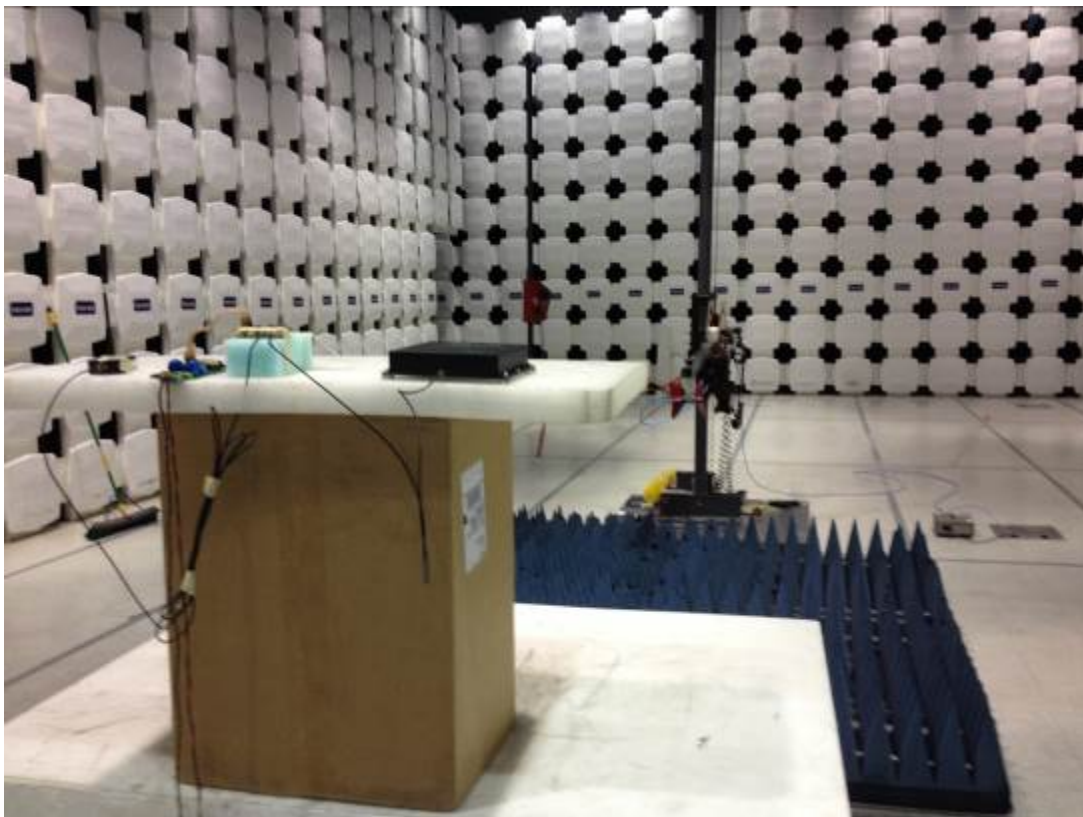
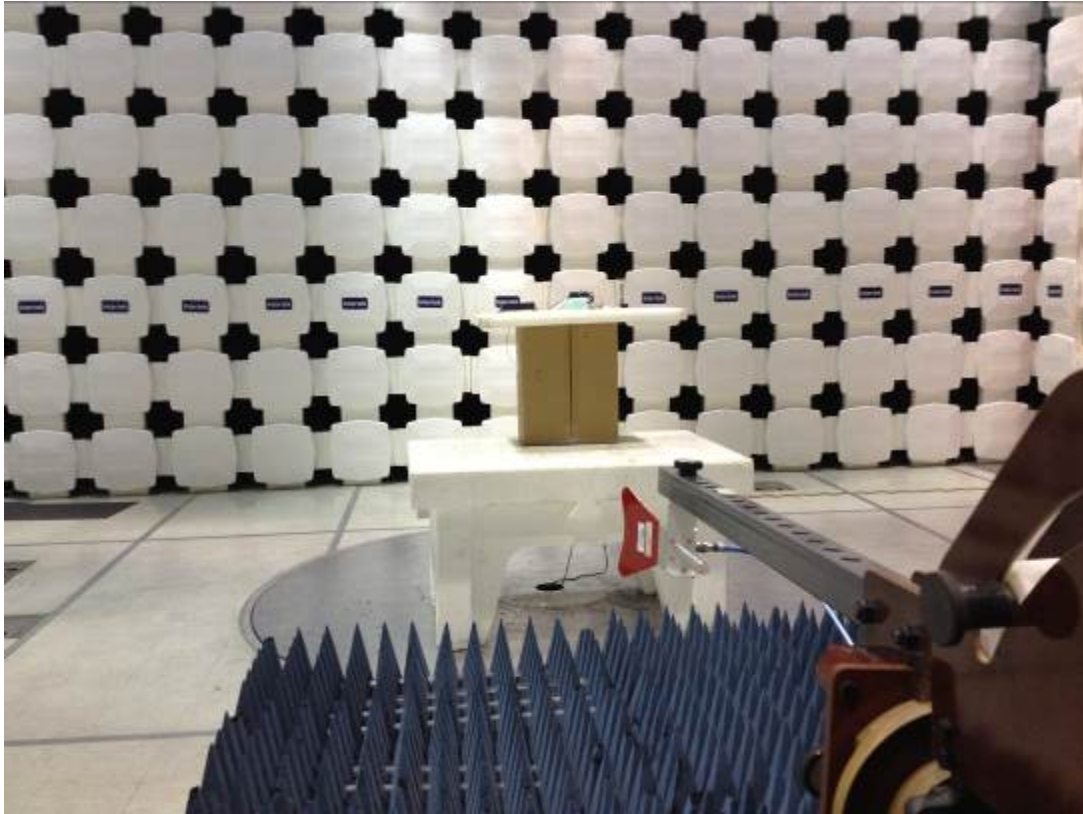
12.3 Results:

The sample tested was found to Comply.

12.4 Setup Photographs:



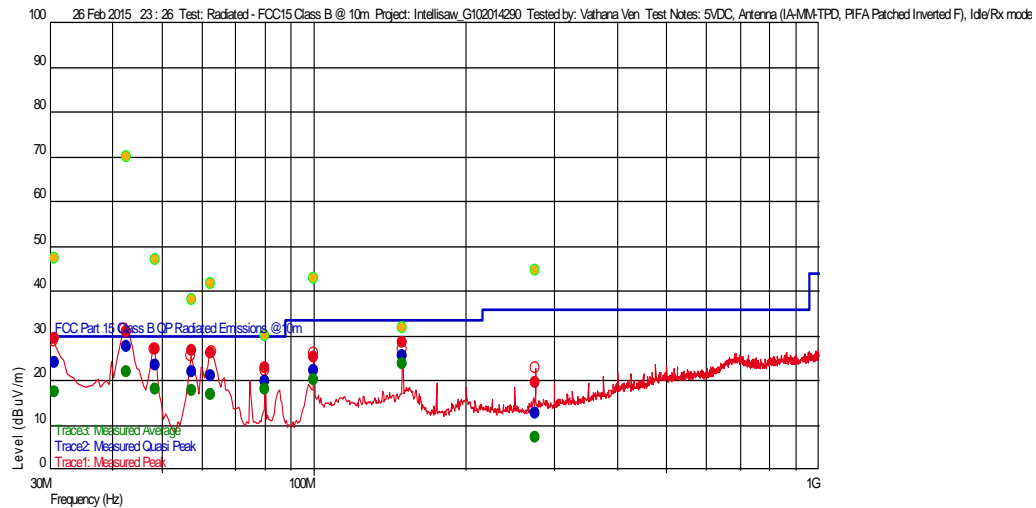
1-4.5 GHz



Test Information

| | | |
|---------------|---|------------------------|
| Test Details | User Entry | Additional Information |
| Test: | Radiated – ICES-003 @ 10m | |
| Project: | Intellisaw_G102014290 | |
| Test Notes: | 5VDC, Antenna (IA-MM-TPD, PIFA Patched Inverted F), Idle/Rx mod | |
| Temperature: | 22 deg C | |
| Humidity: | 10%, 1007 mB | |
| Tested by: | Vathana Ven | |
| Test Started: | 26 Feb 2015 23 : 26 | |

Prescan Emission Graph



- | | |
|---------------------------------------|-------------------------|
| ● Measured Peak Value | — Swept Peak Data |
| ● Measured Quasi Peak Value | — Swept Quasi Peak Data |
| ● Measured Average Value | — Swept Average Data |
| ● Maximum Value of Mast and Turntable | |

Emissions Test Data

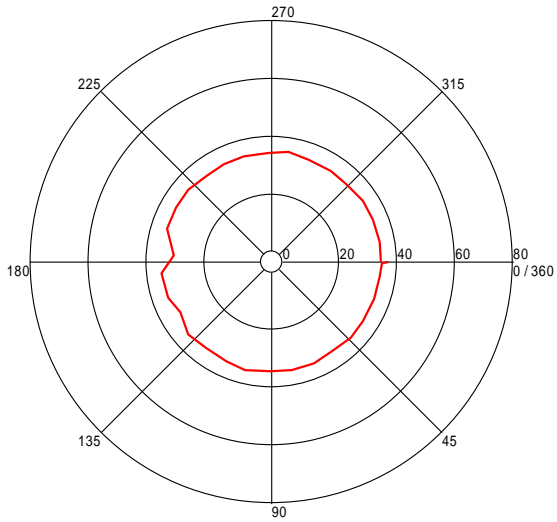
Trace2: Measured Quasi Peak

| Frequency (Hz) | Level (dBuV/m) | AF | PA+CL | Limit (dBuV/m) | Margin (dBuV/m) | Hor (-), Ver () | Azimuth (deg)(Deg) | Mast Height(m) | RBW(Hz) | Comment |
|-----------------|----------------|--------|---------|----------------|-----------------|----------------------|--------------------|----------------|---------|---------|
| 275.129459198 M | 12.54 | 13.403 | -23.356 | 36.020 | -23.48 | | 360 | 1.06 | 120 k | |
| 100.051302685 M | 22.33 | 10.310 | -24.729 | 33.520 | -11.19 | | 275 | 4.00 | 120 k | |
| 80.030260301 M | 19.85 | 7.497 | -24.948 | 30.000 | -10.15 | | 31 | 3.21 | 120 k | |
| 62.621242301 M | 21.01 | 7.700 | -25.056 | 30.000 | -8.99 | | 281 | 4.00 | 120 k | |
| 57.327455052 M | 21.86 | 7.200 | -25.062 | 30.000 | -8.14 | | 328 | 2.83 | 120 k | |
| 150.006212285 M | 25.55 | 12.700 | -24.130 | 33.520 | -7.97 | | 328 | 1.16 | 120 k | |
| 48.485370874 M | 23.33 | 8.606 | -25.230 | 30.000 | -6.67 | | 259 | 4.00 | 120 k | |
| 30.684769595 M | 23.95 | 20.789 | -25.461 | 30.000 | -6.05 | | 1 | 2.72 | 120 k | |
| 42.723246896 M | 27.50 | 12.194 | -25.324 | 30.000 | -2.50 | | 230 | 3.73 | 120 k | |

Azimuth Plots

Turntable Plot (30.684769595 MHz)

Level (dBuV/m)

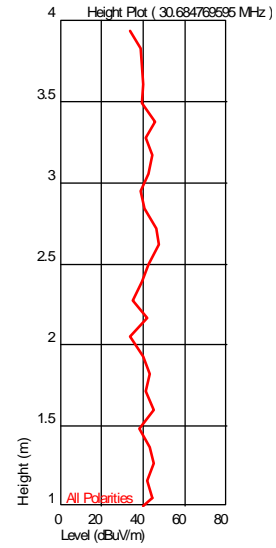


All Polarities

Azimuth (Degrees)

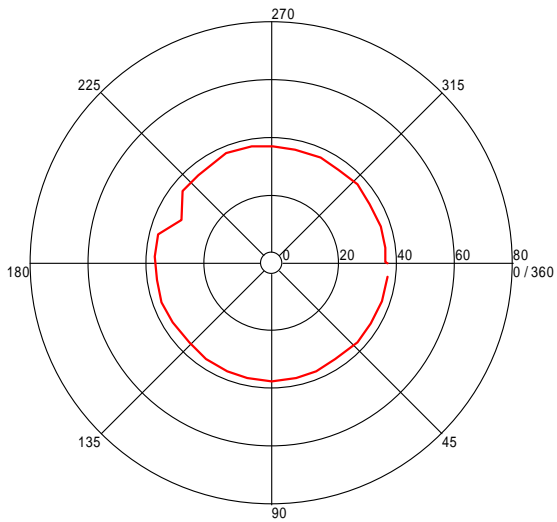
Turntable Plots

Height Plot (30.684769595 MHz)



Turntable Plot (42.723246896 MHz)

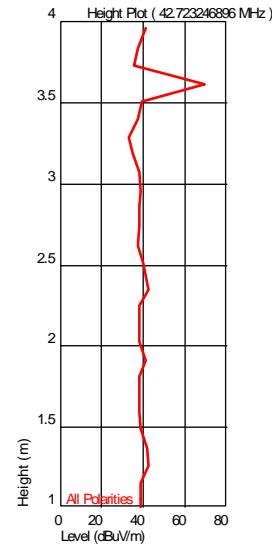
Level (dBuV/m)



All Polarities

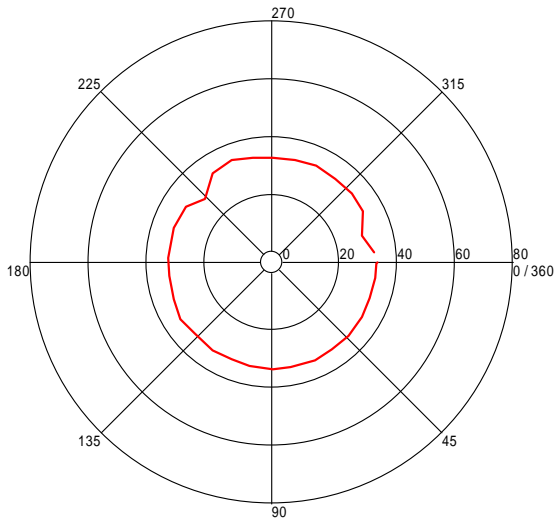
Azimuth (Degrees)

Height Plot (42.723246896 MHz)



Turntable Plot (48.485370874 MHz)

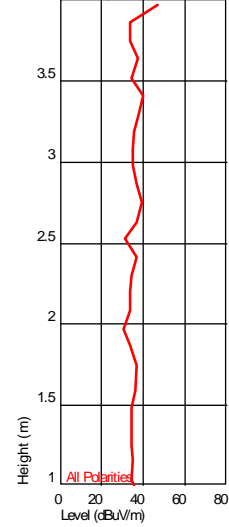
Level (dBuV/m)



All Polarities

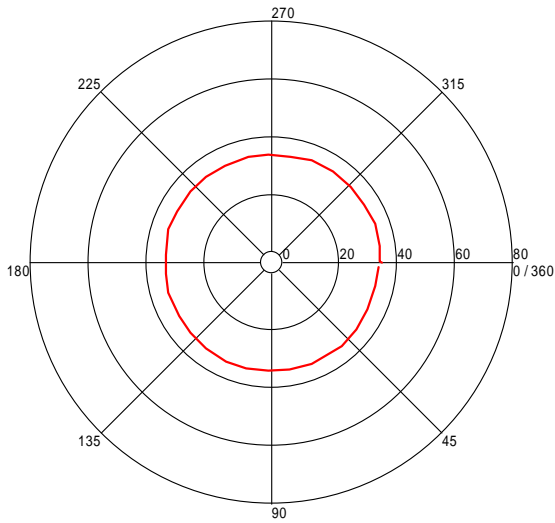
Azimuth (Degrees)

Height Plot (48.485370874 MHz)



Turntable Plot (57.327455052 MHz)

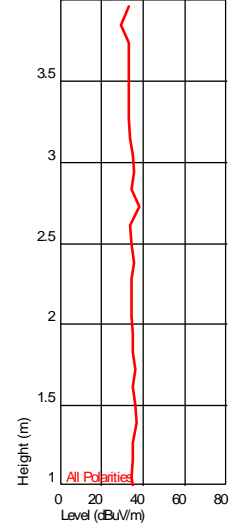
Level (dBuV/m)



All Polarities

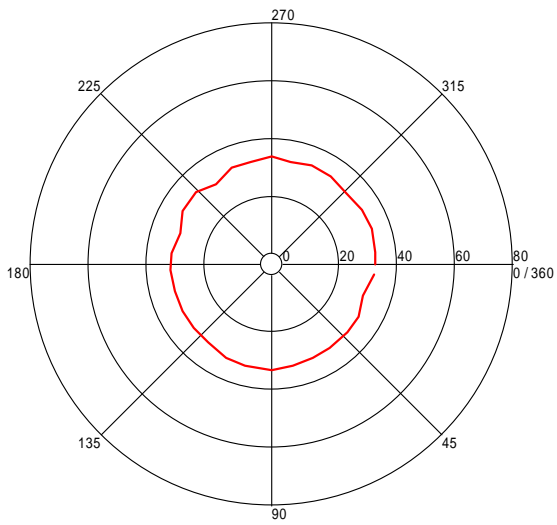
Azimuth (Degrees)

Height Plot (57.327455052 MHz)



Turntable Plot (62.621242301 MHz)

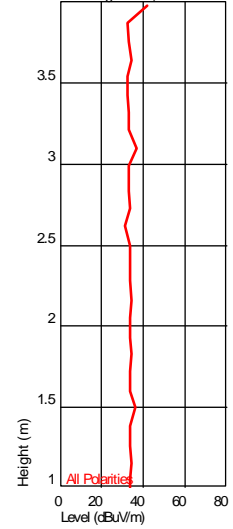
Level (dBuV/m)



All Polarities

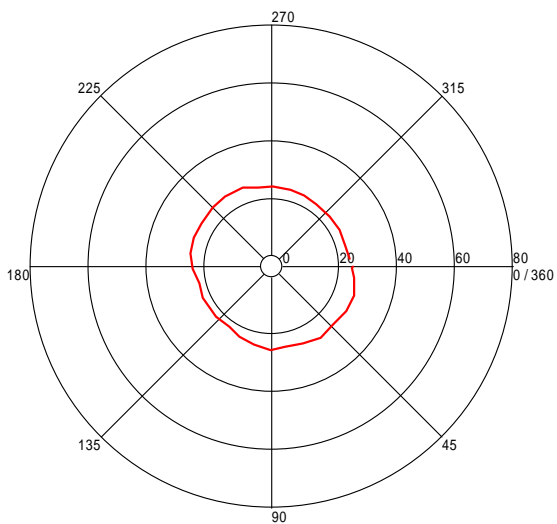
Azimuth (Degrees)

Height Plot (62.621242301 MHz)



Turntable Plot (80.030260301 MHz)

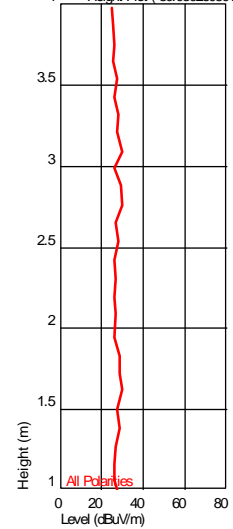
Level (dBuV/m)



All Polarities

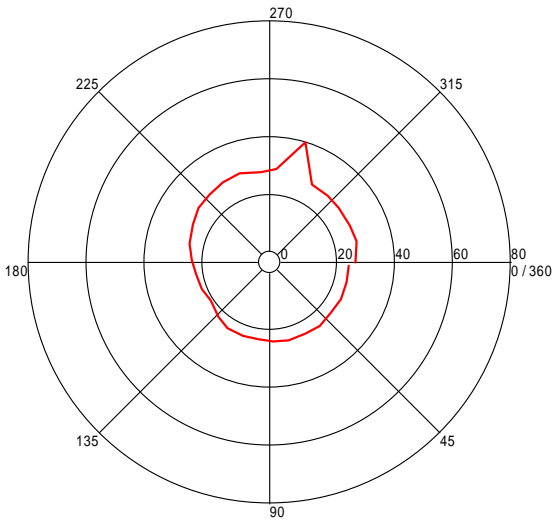
Azimuth (Degrees)

Height Plot (80.030260301 MHz)



Turntable Plot (100.051302685 MHz)

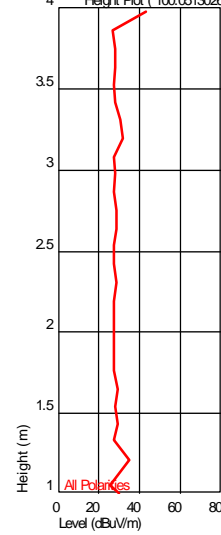
Level (dBuV/m)



All Polarities

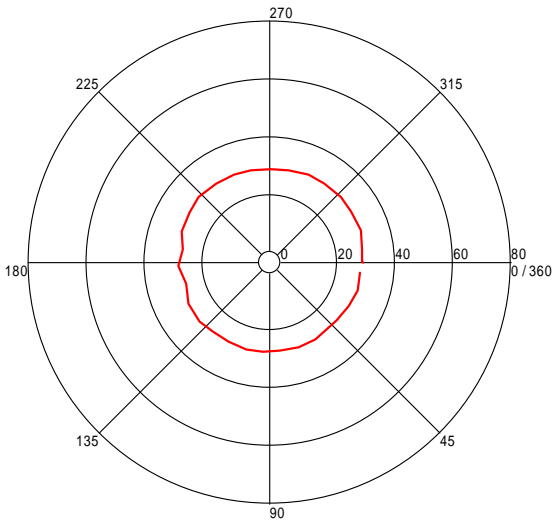
Azimuth (Degrees)

Height Plot (100.051302685 MHz)



Turntable Plot (150.006212285 MHz)

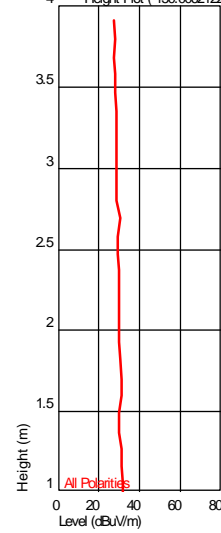
Level (dBuV/m)



All Polarities

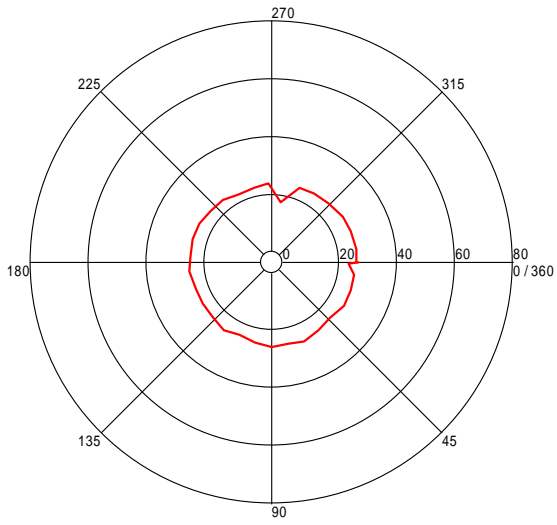
Azimuth (Degrees)

Height Plot (150.006212285 MHz)



Turntable Plot (275.129459198 MHz)

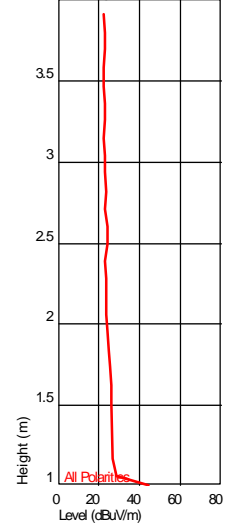
Level (dBuV/m)



All Polarities

Azimuth (Degrees)

Height Plot (275.129459198 MHz)



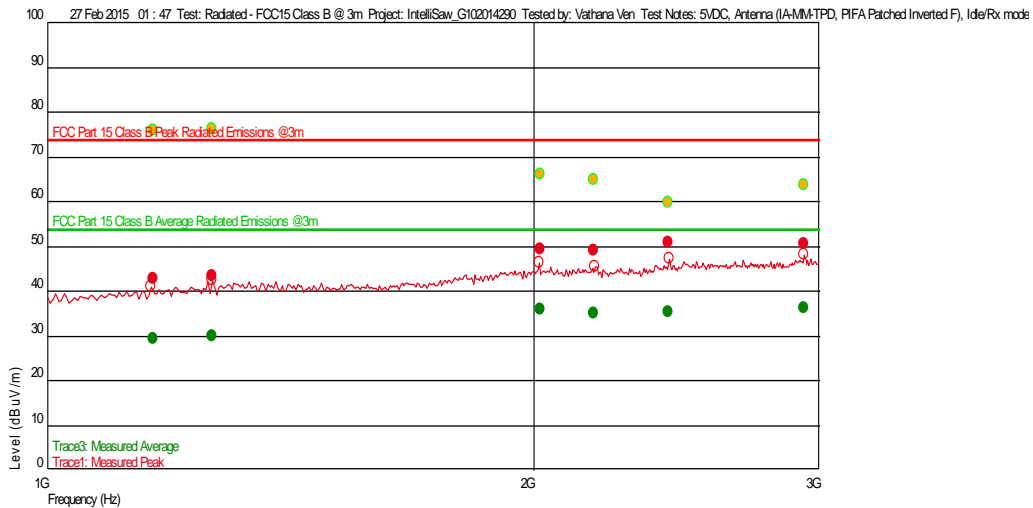
Height (m)
Level (dBuV/m)

Test Information

Test Details
 Test: Radiated – ICES-003 Class B @ 3m
 Project: IntelliSaw_G102014290
 Test Notes: 5VDC, Antenna (IA-MM-TPD, PIFA Patched Inverted F), Idle/Rx mod
 Temperature: 22 deg C
 Humidity: 10%, 1007 mB
 Tested by: Vathana Ven
 Test Started: 27 Feb 2015 01 : 47

Additional Information

Prescan Emission Graph



- Measured Peak Value
- Measured Quasi Peak Value
- Measured Average Value
- Maximum Value of Mast and Turntable
- Swept Peak Data
- Swept Quasi Peak Data
- Swept Average Data

Emissions Test Data

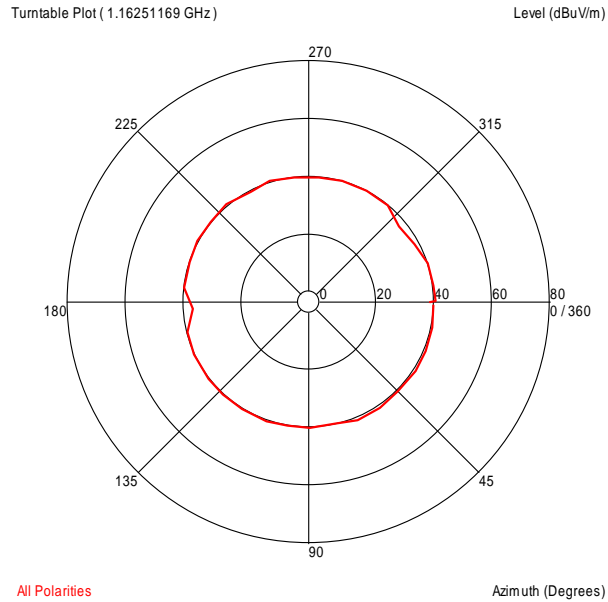
Trace1: Measured Peak

| Frequency (Hz) | Level (dBuV/m) | AF | PA+CL | Limit (dBuV/m) | Margin (dBuV/m) | Hor (--), Ver () | Azimuth (deg)(Deg) | Mast Height(m) | RBW(Hz) | Comment |
|----------------|----------------|--------|---------|----------------|-----------------|-----------------------|--------------------|----------------|---------|---------|
| 1.16251169 G | 42.94 | 27.812 | -28.184 | 74.000 | -31.06 | -- | 0 | 1.08 | 1 M | |
| 1.265190381 G | 43.44 | 28.610 | -27.839 | 74.000 | -30.56 | -- | 15 | 1.32 | 1 M | |
| 2.178804275 G | 48.98 | 31.290 | -25.987 | 74.000 | -25.02 | -- | 320 | 1.06 | 1 M | |
| 2.019124916 G | 49.52 | 31.224 | -25.906 | 74.000 | -24.48 | | 360 | 1.78 | 1 M | |
| 2.937254509 G | 50.45 | 32.853 | -25.170 | 74.000 | -23.55 | -- | 172 | 1.91 | 1 M | |
| 2.419826319 G | 50.84 | 32.094 | -25.873 | 74.000 | -23.16 | | 193 | 1.07 | 1 M | |

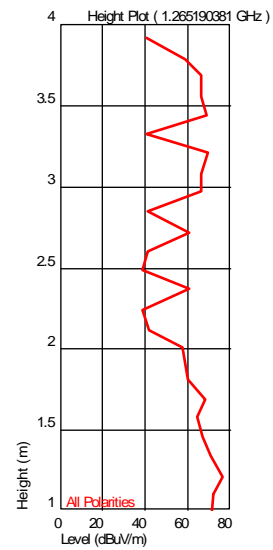
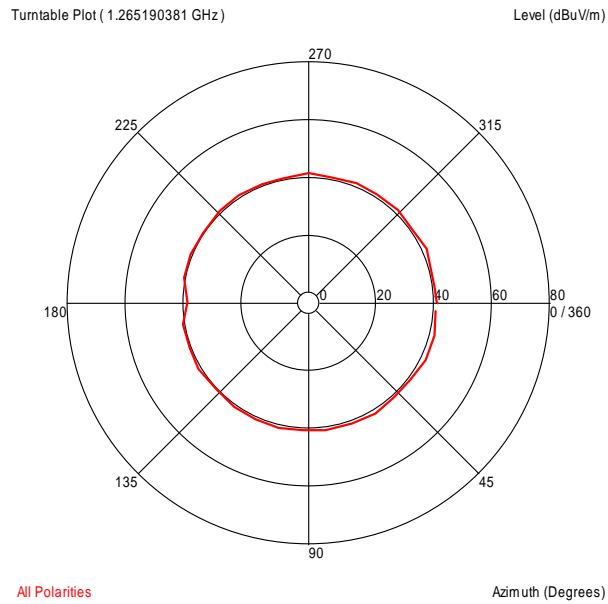
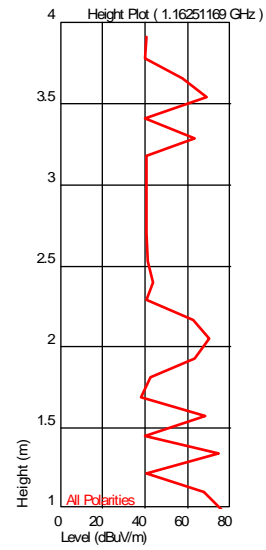
Trace3: Measured Average

| Frequency (Hz) | Level (dBuV/m) | AF | PA+CL | Limit (dBuV/m) | Margin (dBuV/m) | Hor (--), Ver () | Azimuth (deg)(Deg) | Mast Height(m) | RBW(Hz) | Comment |
|----------------|----------------|--------|---------|----------------|-----------------|-----------------------|--------------------|----------------|---------|---------|
| 1.16251169 G | 29.33 | 27.812 | -28.184 | 54.000 | -24.67 | -- | 0 | 1.08 | 1 M | |
| 1.265190381 G | 30.01 | 28.610 | -27.839 | 54.000 | -23.99 | -- | 15 | 1.32 | 1 M | |
| 2.178804275 G | 35.15 | 31.290 | -25.987 | 54.000 | -18.85 | -- | 320 | 1.06 | 1 M | |
| 2.419826319 G | 35.30 | 32.094 | -25.873 | 54.000 | -18.70 | | 193 | 1.07 | 1 M | |
| 2.019124916 G | 36.01 | 31.224 | -25.906 | 54.000 | -17.99 | | 360 | 1.78 | 1 M | |
| 2.937254509 G | 36.27 | 32.853 | -25.170 | 54.000 | -17.73 | -- | 172 | 1.91 | 1 M | |

Azimuth Plots

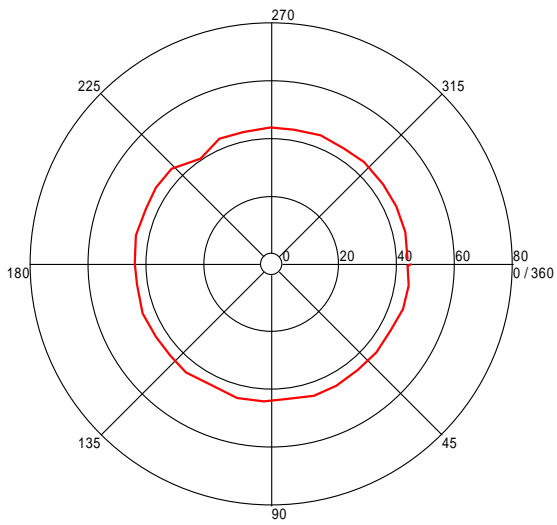


Turntable Plots



Turntable Plot (2.019124916 GHz)

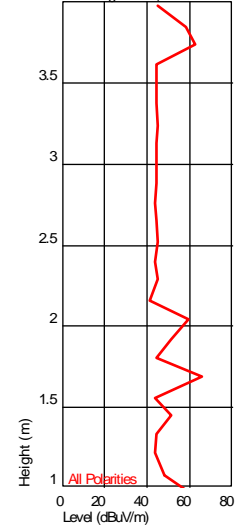
Level (dBuV/m)



All Polarities

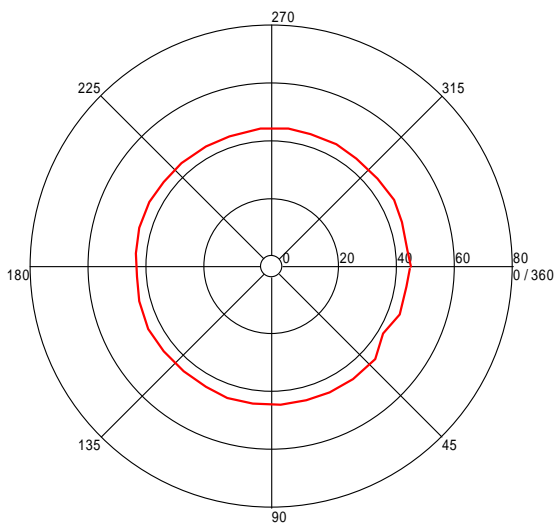
Azimuth (Degrees)

Height Plot (2.019124916 GHz)



Turntable Plot (2.178804275 GHz)

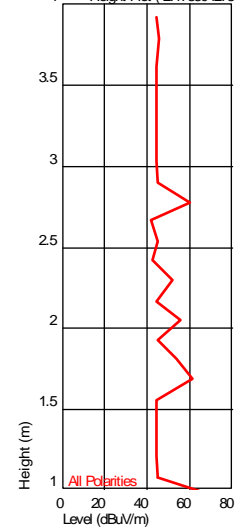
Level (dBuV/m)



All Polarities

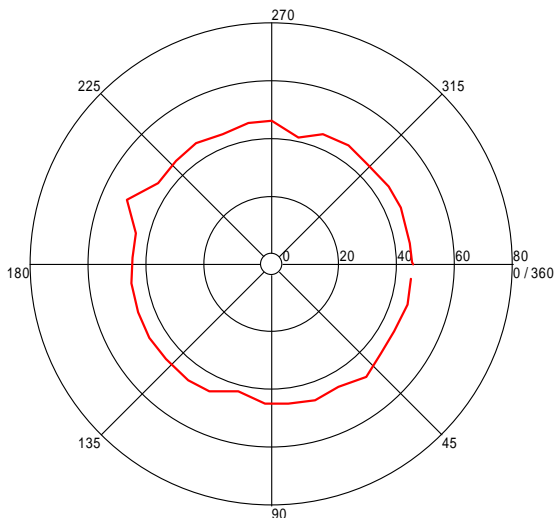
Azimuth (Degrees)

Height Plot (2.178804275 GHz)



Turntable Plot (2.419826319 GHz)

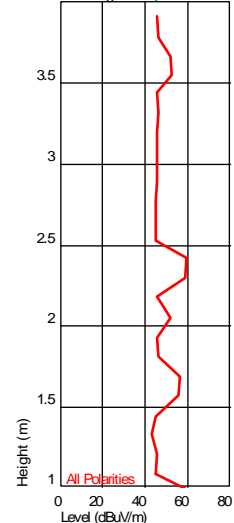
Level (dBuV/m)



All Polarities

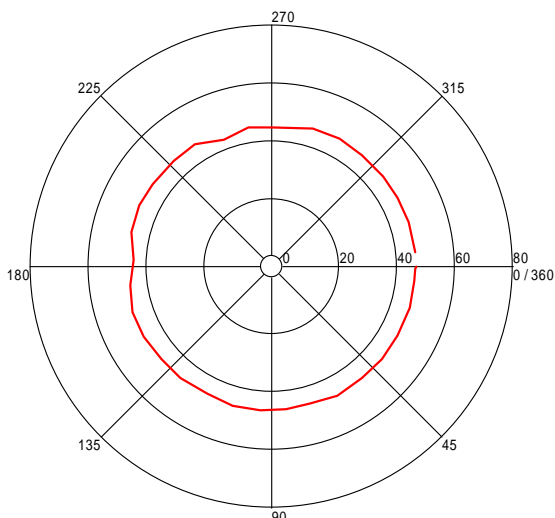
Azimuth (Degrees)

Height Plot (2.419826319 GHz)



Turntable Plot (2.937254509 GHz)

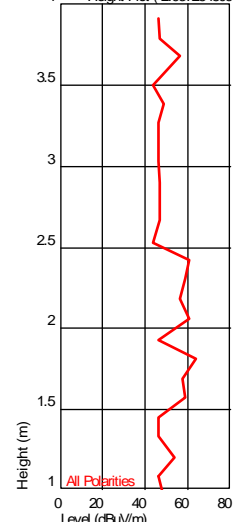
Level (dBuV/m)



All Polarities

Azimuth (Degrees)

Height Plot (2.937254509 GHz)



Test Personnel: Vathana Ven *VSV*
 Supervising/Reviewing Engineer: _____
 (Where Applicable) Engineer: N/A
 Product Standard: FCC Part 15, ICES-003
 Input Voltage: Powered from 24VDC Host
 Pretest Verification w/ Ambient Signals or BB Source: Ambient Signals

Test Date: 02/27/2015

Limit Applied: Class B

Ambient Temperature: See data tables

Relative Humidity: See data tables

Atmospheric Pressure: See data tables

13 Revision History

| Revision Level | Date | Report Number | Prepared By | Reviewed By | Notes |
|----------------|------------|--------------------|----------------|-------------|--|
| 0 | 03/10/2015 | 102014290BOX-001c | VFV <i>VFV</i> | | Original Issue |
| 1 | 03/24/2015 | 102014290BOX-001d | VFV <i>VFV</i> | | Added Industry Canada standards |
| 2 | 08/10/2015 | 102014290BOX-001ee | VFV <i>VFV</i> | | Added line-conducted emissions data on page 62 and data for above 1 GHz on page 39 |
| | | | | | |
| | | | | | |
| | | | | | |